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NEW SERIES.

Agriculture not only gives riches to a nation, but the only riches she can call her own.—Dr. Johnson.

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ON THE MANAGEMENT OF MANURE.

BY Mr. SKILLING, of Glasnevin.

[*From the Proceedings of the Markethill Agricultural Meeting.*]

The subject for present consideration, the collection, preservation, and management of manure, is one of the greatest importance to the agricultural community of every country, and must be a paramount object with every good farmer, every successful cultivator of the soil; no economy, no superior management, no scientific or practical knowledge, no system yet discovered, or likely to be discovered, will supersede the necessity for a liberal and constant supply of this important ingredient to our soils. It ought, therefore, to be a great object with every cultivator, how he shall best collect the largest quantity of the best quality, and apply it in the most judicious manner. That a great deal of misconception, error, and ignorance, prevail on this subject, is quite evident, and not by the farmers of Ireland alone, but also of every part of the United Kingdom. Were I asked, what is the chief cause of the poverty or embarrassment of farmers, I should answer, the want of manure—the poverty and low condition of their land. Much has been done latterly in every part of the United Kingdom by draining, deepening, and otherwise permanently improving the soil; much has yet to be done in that way, and I trust will shortly be accomplished. A permanent improvement, however, once well done will serve for a number of years, a lifetime, or a century; but it is not so with manures—a constant and never-ceasing supply is absolutely necessary to ensure fertility; and, in proportion as these are dealt out liberally or otherwise, will land of every class and quality make an ample or scanty returns. Much can be done by superior management and cultivation of the soil, but our chief hopes of abundant crops must depend upon the supply of manure. It is rather singular, that at this time of day such difference of opinion, and different practices should prevail, even in the best cultivated districts, on a subject that we should suppose every farmer ought to be intimate with, and a subject so immediately connected with his success in life. At a time when agricultural improvement and superior knowledge are obviously making rapid progress, and finding their way into all, even the remotest parts of the country, we should suppose this vital question, the collection and management of manures, would be prominent; first discussed, and best understood. But do we find it so? I fear not. I doubt there is a lamentable ignorance, as I know there is a culpable neglect, and erroneous practice prevailing among the great majority of our farmers on the subject. With all my great respect for the extensive cultivators of the sister countries, and of my own, I am constrained to say, that I believe the great majority are going on a very objectionable system of management. A great number depend on grazing. Another party go too far, and depend on grain crops. Another is confined to an alternate course of both. Neither of these systems is calculated to bring the land to its most productive state, or make a fair return to the manager. In all such cases there must be a lamentable want of manure; money must be expended on extraneous substances, or the land will come to a state of poverty. In grazing, the land will not deteriorate; but it never returns one-half what it ought, either to the owner or to the community. There is one system which I would rejoice to see adopted generally, not only in this, but in other countries—a system that would remedy all the evils so long and generally felt by the want of manure—would supply at all times, and in all situations, an abundance of this necessary ingredient, bringing the land into the highest state of cultivation, rendering the farmer independent of all extraneous manures; and in a great measure equalizing the value of land in different parts of the country. I mean the system of *main-*

taining a sufficient quantity of stock on the farm; house-feeding this stock summer and winter, and raising green-crops for that purpose; and which is equally applicable to a large or small holding.

There is a mode of managing manure which has been tried by many with great success; that is, as the dung is sufficiently made and saturated, to draw it out, spread it, and immediately plough it into the ground intended for green crops. This plan has succeeded particularly well for potatoes. The fresh strong dung immediately induces a fermentation and heat in the ground, acts on the inert matter in the soil it comes in contact with, and renders it soluble, acting both as lime and dung, in preparing the food of plants; the carbonaceous matter and earths in the soil retaining the gases, and preventing escape or evaporation. These views may seem novel, but they are founded on actual experience and observation, and are at least worthy of a fair trial on so important a question.

The proper time to commence the collection of manure is in June, or immediately after the last of the former season has been used for turnips. If the cattle are house-fed, and all weeds and refuse of the farm rendered available, *the summer is the chief time for making the manure,* but in order to do the thing efficiently a daily attention will be required. On anything of a large farm, a man should be employed at this work alone, collecting the dung from the different houses, the weeds from the ditches and roadsides, earth, and peat, if convenient, and bringing all to the main heap, to be mixed as required. Every day the fresh urine and slops in the reservoir should be scattered over the heap, and the liquid manure at the opposite side either drawn out, to be applied to crops, or returned to the dung-heap. A man so employed would make a better return for his wages than any other labourer on the farm. In respect to the liquid manure, this is a grand point to be observed. All manure, of whatever kind, will become liquid, and eventually gaseous; it must be so before it becomes the food of plants, and the nearer that state it is, the sooner it will accomplish its ultimate purpose; but the manure in decomposing is not reduced to its elements in the process, new compounds are formed, the oxygen and carbon form carbonic acid, another portion of oxygen and hydrogen form water, and the remaining hydrogen and nitrogen form ammonia. Besides these compounds (particularly if the dung-heap is composed of a variety of vegetable matter) a considerable quantity of the salifiable bases, in combination with acids, and in solution in water, as soluble salts, are present; if the urine has been regularly thrown over the dung-heap, it immediately decomposes, and here are another set of ingredients, the phosphates and salts of ammonia, in solution, which join and enrich the already formed liquid which runs from the dunghill. Now, it is well known that carbonic acid, ammonia, and water, with the various resinous salts in solution, are the true food, nourishment, and sustenance of plants, and these same compounds, when absorbed and acted on by heat, light, and air, undergo other chemical changes, and produce all the multitudinous variety of the vegetable world, which again is the sustenance of animals. These facts ought to startle the farmer, and make him reflect that the black fœtid fluid which oozes from his dung-heap, and is wasted away to the gripe, or suffered to evaporate in the air, is the true food and sustenance of plants, already prepared, cooked (as it were) for their use; and this is the reason why the same substance acts so instantaneously and effectually on almost every plant to which it is applied in its pure state. These considerations should induce him to hoard this liquid like gold in the chest; this is the essence of the manure, the spirit of the dung-heap; when this is gone what remains is comparatively inert and useless; he should, therefore, collect it constantly and carefully, carry it out to enrich his crop or return it to the dung-heap; he should never forget that a dung-heap which has the liquid manure in it and one that has lost it, are very different subjects, and will act differently on his crops. A quantity of rich earth ought always to be near the dung-heap, and to cover and prevent the escape of gases, and spread about to absorb the liquid that might run off.

Another subject on which much difference of opinion prevails, viz., whether organic manure ought to be decomposed before using, or ploughed into the ground recent and fresh? With all deference to the opinions of Sir Humphrey Davy, and other modern writers who agree with him, and recommend the latter plan, I entertain a different view. I would prefer the well-rotted dung. I think the idea of using rough or fresh dung, and the recommendations to do so, arose from the manner in which such substances were, and are still, I fear, usually treated; suffered to lie so long exposed to the atmosphere, fermenting and giving off their fertilizing qualities, and allowing the liquid to run to waste; but if the dung-heap be treated in a proper manner, no such loss can be sustained. Wherever there is a quantity of straw, and other accumulations of vegetables, and even animal dung, there will be the seed of annual or other plants. If this be used fresh and undecomposed, the seed will be fresh, will start in the spring, will dirty the land and the crop, and perpetuate the farmer's annoyance; but no such thing can happen when the heap is decomposed: the heat generated by the process and continued, and the new fermentation induced repeatedly by the fresh urine and liquid thrown constantly over it, will dissipate the germ of every such seed, and, practically, we find the well-rotted dung always produces the clean crop. The gardener is no mean authority on this, as well as on many other agricultural subjects; we invariably find him and the steward at loggerheads about the dung. The former will always select the best corner of the dung-heap, which is well rotted, pulpy, and full of liquid, cutting with his spade like soap. Such highly concentrated and powerful substance he finds necessary to force the large and repeated crops he is required to produce. The steward again complaining, that, besides taking too much, he (the gardener) selects the best, and leaves the refuse for the farm. In the use of rough or fresh dung and compost, the land is more likely to be cheated, than by using the well-rotted concentrated manure from the original heap. With regard to tanks for catching and saving the liquid manure, they may be useful and necessary to a certain degree, but certainly not to the extent sometimes used and recommended on the Continent. Where peat, light earth, and other substances are used to absorb it, and these thrown on the heap alternately with the dung, I think it a better plan to preserve it; but if the liquid be required for the vegetables of the farm or garden, or for top-dressing lawns or other grasses, a very simple contrivance may be made at the under part of the dunghill to suit all the purposes; but one thing must be particularly observed, that the tank ought never to be on the same side of the dung-pit, or in communication with the sewer which contains the fresh urine and liquid from the houses; it ought always to be on the opposite side, and where it will catch the liquid which has passed through the dung-heap. The alkaline qualities of fresh urine will undoubtedly be injurious to vegetation if applied in that state; it ought always to be allowed to ferment, or be thrown over the dung-heap where fermentation is going on, and where it will immediately join the process, be decomposed, and run in with the other liquid manure in its most powerful state; this may be used with safety and the best effects, no matter how concentrated, to almost any crop. The using it in its fresh and caustic state has sometimes raised a prejudice against it.

Two very important substances have been used as substitutes for farm-yard manure—I mean bone-dust and guano. They are entitled to rank far above any others of the recently-prepared manures, on account of their well-ascertained, steady effects, particularly in producing green-crops. Guano, from its suiting every soil, and almost every crop, when judiciously applied, is calculated to produce a revolution in the agricultural world, in raising turnips and other green-crops in our worn-out soils already in cultivation, and inducing the improvement of our waste and hitherto unproductive lands: in these respects the discovery and use of this substance is an important era in the history of farming. No farmer can now be excused who wants a sufficiency of green crops for his cattle; a comparative trifle in the purchase of guano will produce him a crop of turnips, and start him in a new and profitable course of management. To the cultivator who commences the first year in a poor farm without manure, or who wishes to extend his cultivation, and provide for the keep of additional stock, this manure is invaluable, sets him at once upon his legs, and places him in a proper and advantageous position; but, being so placed, and provided with a sufficiency of food for an adequate number of cattle, if he house-feed and mind his dung-pit, he will not again require guano, or any other extraneous manure, but will have quite sufficient for all his purposes, and of a quality superior to anything that ever was or is likely to be discovered.

THE AGRICULTURE OF SOUTH AND NORTH BRITAIN COMPARED.

It is not until you reach the further part of Northumberland that superior farming is found. There indeed around Belford you find it excellent, and on the land of Lord Grey and of Greenwich Hospital; I may mention also the farm of Mr. Nairn at Warne Mills, near Belford, and that of Mr. Jobson, of Chillingham; again too, in following the banks of the Till, down to the Tweed: yet even between these two fine districts a moorland tract must be crossed, neglected indeed, but not barren. So again in Scotland, 30 miles beyond Berwick, arriving at Dunbar you find, along the sea-coast, some of the famous farms of East Lothian. It is an extraordinary soil, for which the tenants, farming admirably, pay the well-known rents of £4 or £5 the acre, which some suppose to be the common rents of East Lothian. But ride two or three miles only inland, and you find, first, land well farmed at £2 an acre; then land at £1 per acre—some of it very ill farmed, foul, and out of condition; then the Lammermoor Hills, which are not farmed at all, but are in the same state as Lincoln Heath when the Dunston beacon* was lighted nightly. Onwards again to Edinburgh, for 30 miles through the Lothians, you will see good land most excellently farmed, but sometimes also moderate land in a very slovenly state. If from thence you travel along the mail-coach road to Carlisle, on losing sight of Edinburgh Castle, you pass for 70 miles through the heart of south Scotland, over moors covered with a rank grass, which shows that they might bear something better, or among scanty corn-crops, which prove that nature has been little assisted by art. I cannot therefore place the general farming of southern Scotland or of Northumberland on a level with the farming of our southern counties, such as Buckinghamshire, but rather with that of North Devon; nor the general farming of East Lothian on a level with the general farming of Lincolnshire; nor the best farming of East Lothian on a level with the best farming of Lincolnshire, because it is the best land only of East Lothian on which such noble examples of farming are given, while in Lincolnshire the barren heath and wold have been taught nearly equal luxuriance.—*Mr. Pusey on the Agricultural Improvements of Lincolnshire.* Jour. Roy. Ag. Soc. of England, vol. iv, part 2.

ON THE MODE IN WHICH LIME OPERATES IN RENDERING THE SOIL BETTER ADAPTED FOR THE GERMINATION AND GROWTH OF PARTICULAR PLANTS.

BY ROBERT M'TURK, ESQ., OF HASTINGS HALL, DUMFRIESSHIRE.

[Premium, the Silver Medal.]

(From the Journal of Agriculture, No. III, New Series.)

There is no substance, perhaps, so extensively used for agricultural purposes, with regard to whose agency, and the time of applying it to the soil, the opinions of practical men have differed so widely as that of lime; for, while it has been, and, I may say, is at the present time, regarded by one class of agriculturists as a manure, it is by another, and, perhaps, not the worst-informed class, regarded merely as a stimulant; that of itself it contributes almost nothing to the growth of plants, and that the benefit resulting from the application of it to the soil is owing entirely to the action which it exerts upon other bodies which it encounters in the soil. It would not be difficult to show that lime, like the other earthy bodies, enters so sparingly into the constitution of plants, that its presence in many whose growth it promotes can, upon analysis, with difficulty be detected, and we are, therefore, entitled, perhaps, to regard its presence on some occasions as accidental, rather than as a necessary constituent. Were lime really entitled to be regarded as a manure, we are inclined to think that its effects would be less evident than they really are, especially when we take into consideration the very small proportion in which it is found to exist in those plants which are considered as most worthy of cultivation, and for promoting the growth of which it is most frequently applied. To what, then, are we to attribute the increased fertility of those soils which have received a due proportion of lime? Most certainly not to the influence which it exerts over the earthy bodies which constitute the soil, these being saturated metallic oxides, which have no affinity for it. Nor has lime an affinity for any of the elements which they contain; and, if the soil did not contain other ingredients, upon which it powerfully acts, its application would be followed by no beneficial results. These ingredients are the remains of bodies which have lived and died, and still, in some measure, retain their organization; and, in proportion to the quantity of decomposable matter which they contain, and the causticity of the lime when applied to them, will be the effect produced. If, then, the action produced by the lime depends so much upon the state in which it is applied, it is also proper that we should mention that its causticity depends, *first*, upon the freeness from other earthy matters, or, in other words, its purity; and, *secondly*, on the time that is allowed to elapse between the burning and the application; the burning being simply the means by which the carbonic acid is expelled, and the lime being thereby changed from a mild to a caustic state, or, as it is called, quick-lime. Water is then applied, for the purpose of slaking or pulverising it, in order that its distribution over the land may be more equal, and effected with greater facility. But, from the time it is cooled, after it comes from the kiln, its affinity for carbonic acid gas is very strong, and it will continue to attract it from the atmosphere till it is again united to a proportion equal to what was expelled by the operation of burning; and if this is allowed to take place before it is applied to the soil, it returns to a state comparatively inactive, and, in proportion as it has been allowed time, and placed under circumstances favourable for attracting carbonic acid gas, it will lose the power of acting upon, or disorganizing the animal or vegetable remains which it encounters in the soil, and also of neutralizing any acidulous matter which may there exist.

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* A pillar 70 feet high—a land lighthouse—built no longer since than the middle of last century, as a nightly guide for travellers over the then dreary waste, which still retains the name of Lincoln Heath, but is now converted into a pattern of farming.

We shall now endeavour to explain the nature of the action which lime exerts upon the organized matter it encounters in the soil, and in what manner this action tends to promote the germination and growth of particular vegetables.

When a plant dies, it leaves its roots in the soil; and the roots of some plants occupy a much larger space than a person unacquainted with their growth may suppose. The softer and more juicy parts begin to rot or to be decomposed—which, in fact, is the loosening of that mysterious influence by which the elements of all organized bodies are held together as long as life endures; and the process of decomposition of any animal or vegetable substance is, therefore, simply the restoring to nature those substances, in their elementary forms, which it at first received from *the soil or atmosphere*—and this process goes on with more or less rapidity according to the nature of the substance, and the circumstances under which it is placed. Although it is a well-established fact that putrefactive fermentation, or the process of decomposition, cannot take place unless in a temperature of above 32° Fahrenheit, a free admission of the atmosphere, and a certain degree of moisture; still these agents are always present in the soil, within a moderate depth from the surface, and under circumstances sufficiently favourable to effect the decomposition of the softer and more juicy parts of animal and vegetable substances; but when their decomposition has taken place, the more solid parts still remain, and these, with the yearly contribution afforded by the more recent plants, constitute an inexhaustible source of organized matter from which, by well-directed skill and industry, man may derive his means of subsistence. In this beautiful provision of nature, we find that, when man commits to the earth the remains of animal or vegetable bodies, he not only secures a present nourishment to crops which supply his own immediate wants, in the more decomposable parts of those remains, but has also laid up a bountiful store for those of his race who will take his place on earth when his labours are over. Lime, then, is an agent which enables us to avail ourselves of the hidden stores of nourishment which the soil contains; for, when it is applied to the soil in its caustic state, it is washed in by showers of rain, and, in its progress through the soil, encounters a portion of inert, insoluble, but decomposable matter, which it acts upon in such a manner as to effect its decomposition, and resolve it into three parts essentially different in their nature and character, all which parts are contained in the smallest portion that can be decomposed—*first,* the gaseous; *second,* the soluble; and, *third,* the residuary matter. It is the two first of these we are to regard as the immediate cause of the increased fitness of the soil for the germination and growth of particular plants.

First, then, with regard to the germination of particular seeds, and there is none with regard to which it is more remarkably the case than that of white clover, and, at the same time, there is no plant more desirable to be obtained. When lime is applied to the surface of pasture land of so inferior quality that clover has not before made its appearance, and, if the land is not so wet as to counteract the influence of the lime in the course of the second year after its application, white clover is almost certain to appear. It is evident from this, that the seeds of the clover must have been in the land before it was limed, as the calcination of the lime completely precludes the possibility of the lime itself being the medium through which they had been conveyed. How long the seeds may have lain there, without their vital principle being destroyed, we have no data to form an estimate; but we know they must have been there from a very remote period, and their coat must be of a very impervious nature, to have prevented germination, and to have protected it so long from injury; for germination, like decomposition, requires a certain temperature, and the seed to be in contact with moisture and the atmosphere; and the rapidity of the process, in these circumstances, depends upon the temperature, so long, as it does not exceed 100° of Fahrenheit. When lime, then, commences its action upon decomposable matter, a portion of gas is disengaged, which penetrates the soil above it, and is partly absorbed by the soil, and partly makes its escape to the atmosphere; and, as decomposition proceeds, the soil becomes looser and more permeable to the atmosphere. The temperature is, at the same time, increased by the more ready admission of the sun's rays, while the heat, which is always evolved in the process of putrefaction, stimulates the seed to absorb moisture, and, at the same time, oxygen from the atmosphere, which finds ready admission through the now permeable soil. The germination of the seed is thus effected which had lain for ages in the soil, and might have continued so for ages to come, had the action of lime on the decomposable matter not rendered the superincumbent soil porous, by which the atmosphere was admitted, and the oxygen, its vivifying principle, absorbed, and the temperature raised by the ready admission of the sun's rays and the heat evolved during decomposition.

The next point for consideration is the manner in which lime promotes the growth of particular plants. Although the seeds of some plants are covered with a coating so impervious to moisture and the atmosphere as, when buried in the consolidated earth, germination cannot take place without the agency of some powerful stimulants, such as lime, still we are acquainted with no plant of which it does not in some degree promote the growth. It is true that, when applied to land, some of the plants which before occupied the surface disappear; but it is doubtful whether this arises from anything in the lime which is deleterious to such plants, or whether its action has so powerfully promoted the growth of others, that their increased luxuriance proves fatal to those of weaker character; and, if pasture is allowed to become too tall and rank for two or three summers together, the white clover, which indicated the improvement of the land, is choked, and the action of the lime having subsided, the germination of other seeds of the same plant does not take place.

When gaseous matter is disengaged by the action of lime, the matter to which it has united itself is partially rendered soluble in water; and it is a truth, which requires no illustration, that no substance of any kind can be received as nourishment by plants which has not, in the first instance, been dissolved in water, the mouths of the roots being so very small as not to admit the point of the finest needle. It further seems to be a law of nature that organized substances cannot again form part of a living being without being in the first place disorganized; and in proportion to the quantity of the inert matter which the lime has acted upon and rendered soluble, and also in proportion to the gaseous matter which has been evolved during the process, and been absorbed by the soil, will be the amount of nourishment or advantage resulting from the application of lime. Although we have selected clover as the plant, the germination of which frequently follows the use of lime, there are others over which it exerts an equal influence; but as its appearance is the surest indication of an important change having taken place in the soil, whether the lime had been applied to improve the pasturage or to enrich the soil for the cultivation of other crops, the appearance of other plants is often overlooked, and some do not germinate till after the land is ploughed and placed under more favourable circumstances, of which class of plants the dead nettle furnishes a good example.

There is another argument which we may advance, in support of this view of the germination and growth of clover, arising from the influence of draining. Where this improvement has been sufficiently made, so as to effect an amelioration of the soil, white clover is sure to make its appearance. This is owing exactly to the same change in the soil, in consequence of drainage, which we have ascribed to the lime; for, when superabundant moisture is withdrawn, plants of a semi-aquatic nature die, and others, more suited to the altered nature of the soil, take their place, and the atmosphere and sun's rays are permitted to penetrate with facility the space which the water had occupied. The necessary agents for promoting decomposition are then present, and the process first commences among the partially decomposed remains of vegetables which have perhaps died many years before, and it matters not whether their decomposition has been brought about by the action of lime or the influence of draining. Seeds of difficult germination existing in the soil are placed under the same favourable circumstances as with lime; for the oxygen absorbed by the seeds during the process converts the farinaceous matter which they contain into sugar, and the roots of the infant plant are supplied with it till it possesses strength to take hold of the soil, and to appropriate to itself a portion of the soluble matter which the process we have described had formed in the soil.

The Marquis of Tweeddale stated at the Society's meeting at Berwick, that lime seemed to be injurious to crops on land that had been drained. The noble Marquis did not state in what respect the crops were injured in consequence of the lime; but it appeared to us not less evident than if his Lordship had stated it in explicit terms, that the injury could only have arisen from one of two causes, namely, from too violent action excited by the united influences of draining and liming a soil containing much decomposable matter, and the consequent evolution, too, of much gaseous matter, in its ascent to the surface, had loosened or *heaved* the soil, that the seed was thrown out, or the plant rendered so loose as to become incapable of nourishing itself in the slightest drought. This is one way in which lime might prove injurious to drained land; but there is another we have frequently witnessed, in the *lodging* of the crop before the ear is filled, from the luxuriance arising from excess of soluble matter, excited by the united agencies of liming and draining.

We shall now mention some of the experiments which we made in the course of the season, which tend to illustrate and confirm the statements here advanced as to the causes of the appearance of white clover when lime is applied. On the 12th May, 1841, we had a piece of land, well dug and cleaned, divided into nine parts, by means of pins driven into the ground, and division boards nailed to them, to keep them firm in their places. The use of the division boards was not only to divide the portions of ground separately, but also when the ground was levelled within them the exact depth of earth in each division might be measured.

No. 1. Six feet square; the clover-seed sown on the surface.

No. 2. Ditto; the clover-seed raked in gently.

No. 3. Ditto; half an inch of cover.

No. 4. Ditto; six-eighths of cover, one half of the division compressed by treading, and afterwards smoothed.

No. 5. Ditto; one inch of cover, and the other half compressed.

No. 6. Ditto; one inch and a quarter of cover, the other half compressed and smoothed.

No. 7. Ditto; one inch and a half of cover, the other half compressed and smoothed.

No. 8. Ditto; two inches of cover, one half compressed and smoothed.

No. 9. Ditto; two inches and a half of cover, one half compressed and smoothed like the rest.

After the one-half of the divisions, Nos. 4, 5, 6, 7, 8, and 9, were compressed by treading upon them, and smoothing them with the back of a spade, the one-half of each of the nine divisions in the opposite direction received an ordinary liming. The weather, for some time after the 12th, was mild, and sufficiently moist to forward germination. Nos. 1, 2, and 3, were in an active state of germination on the 19th day of the month; No. 4 on the 21st, and the compressed division not till the 25th; No. 5 on the 24th, and the compressed and limed division not till the 1st of June, the other some time afterwards; No. 6 germinated only on the limed divisions, the uncompressed about the middle, and towards the end of June; No. 7 exhibited at this time no appearance of clover, and afterwards a few plants appeared on the limed divisions, some time after the removal of the weeds which had germinated upon it, and this operation no doubt promoted both the action of the lime and the germination of the seeds, by allowing the air more ready access to those parts from which the roots had been extracted, and also, not improbably, by bringing some of the clover seeds nearer the surface. On Nos. 8 and 9 we had no clover plants in the course of the season. On Nos. 1, 2, 3, and 4, we could observe no difference on account of the lime, though applied in a hot or caustic state; and the reason, we conceive, why it had no influence on these divisions was, because they were placed under circumstances so favourable to germination that it was effected before the action of the lime commenced; and that on Nos.

5, 6, and 7, which were under circumstances less favourable, the germination did not take place till stimulated by the action of the lime; and whether it will have any influence on Nos. 8 and 9, next summer will shew.

The practical inference we would draw from these experiments, in the first place, is this—Is the present system of sowing clover calculated to promote germination? We have no hesitation in saying that it is precisely the reverse; for, when sown with rye-grass seed, and harrowed in, in the usual way, it cannot fail to be too deeply covered, and the consequence of the rolling, which is now a general practice, must also increase the evil. It is, perhaps, from this cause that we always see the best braird of clover on the hard and gravelly parts of the field, and we therefore conclude that that is the land best suited for its growth, when, in fact, we are inclined to think that, under the present system of sowing, harrowing, and rolling, that it is only the best adapted for the germination of the seed from its more permeable nature. It might be worthy of investigation to ascertain how far the present system of management will account for the falling off of the crops of red clover, which has been experienced for some years back; for the germination of the seed of this plant requires circumstances not less favourable than that of the white. To ascertain this point, it would only require to be sown by itself, after the rye-grass is harrowed in, and might be tried either with or without rolling.

There is another practical application that may also be drawn from the view we have advanced regarding the action of lime upon decomposable matter. We have imputed to this action nearly the whole benefit resulting to the crop from its application. If this view is well founded, it must follow that its application to land which naturally contains but little, or which has been exhausted of its decomposable matter by over-cropping, or otherwise, (for much ploughing, by exposing the soil to the action of the atmosphere, also tends to decompose animal or vegetable matter, and the crops to exhaust it), can be attended with little or no advantage, and it is from this cause that the first application of lime is always attended with the best effect from the undiminished accumulation of this matter in the soil. The application of dung or any other manure to the soil, to use a familiar illustration, is like giving a feed of corn to a horse—it tends to strengthen and nourish; while lime may be regarded as the application of the whip or spur—it imparts no new strength, but stimulates into action the power which previously existed.

The Common Scythe against the short-handled or Aberdeenshire scythe.—During last harvest a trial of these scythes was made on Mr. Allan's farm, Linkfield, near West Barns, Dunbar. It originated in a bet between Mr. Allan, Phantassie, and Mr. Kerr, Howmuir, factor to Mr. R. Ferguson, M.P.; Mr. Allan betting on the superiority of the Aberdeenshire implement. The man using the short-handled scythe was a native of Aberdeenshire, and his opponent was one of Mr. Kerr's best mowers. They started at five minutes past seven o'clock, a.m., and finished at eleven minutes after nine; the Aberdeenshire man having cut 1 rood, 34 poles, and 10 yards, in two hours and six minutes; Mr. Kerr's man having cut 1 rood, 29 poles, and 10 yards, in the same time; the former being equal to an imperial acre in 4 hours and 31 minutes. The trial was to have lasted three hours, but Mr. Kerr, seeing his man completely exhausted, desired him to give in, observing, as he did, the other individual going on almost as fresh as when he started.

A Spirited Farmer.—At an agricultural meeting the other day, the Duke of Cleveland said, within three miles of the place where he had resided for the last nine years was a place which had long been rented as a rabbit warren; a spirited farmer acquainted with it applied to Sir William Welby, and said if he could have a lease for 14 years that he would break it up and bring the land into cultivation, his rent being allowed to remain at the same amount as that paid by the warrener. This offer was accepted, and the farmer, being satisfied that the undertaking would ultimately repay him, entered with spirit upon it. In the fourth or fifth year after the warren was broken up, he (the Duke of Cleveland) saw this farm, and he could testify that it was bearing the best crops in the county; and last year, in the month of July, he again saw it, and would not wish to behold finer crops of wheat, barley, and oats, than those which he witnessed growing on this very farm. This showed what could be done by a spirited farmer. At the end of four or five years after he entered on the cultivation of this farm, the tenant applied to his landlord to erect suitable buildings upon it. Sir W. Welby observed, that the rental was so small that he could not be expected to incur an outlay of that description. This farmer, however, not having sufficient confidence in a lease of 14 years to induce him to erect the necessary buildings, made an offer, that if his landlord would extend it from 14 to 21 years, he would build himself a complete range of buildings. This was agreed upon, and a better and more perfect set of buildings could not be seen than he had erected. Now, the tenant would no doubt be amply repaid for his outlay. The landlord, although he would have to wait so many years before he took any advantage from the improvement, would ultimately find his farm trebled, or quadrupled in value.

Guano a Destroyer of the Wire-worm.—The annual meeting of the Royal Agricultural Society of Guernsey was held in Guernsey, on Wednesday, the 22nd November, 1843, at the Assembly Rooms, Market Place. After the exhibition about 70 gentlemen sat down to dinner, under the presidency of Harry Dobrée Esq., who was supported by the Right Hon. and Rev. Lord de Saumarez, by the President of the State of Guernsey, and other gentlemen. The speeches were of a practical character, and strongly partook of that agricultural movement so prevalent in our own country. The chief subjects discussed were those of weeding, draining, breeding, and manuring. In reference to manuring Mr. Thoume gave some statements of his own experience which are important. In speaking of guano, he said, that independent of its value as a most powerful manure, it is a great enemy to the wire-worm, which vermin on some lands are quite a scourge. I rent a field, said Mr. Thoume, belonging to government, in which I sowed 16 vergées of wheat in December last; and, fearful of the wire-worm, I spread over the land at the time of seeding a mixture of five bushels of salt and ten bushels of soot per vergée. In the same field, in the month of February, I sowed 2 vergées of oats with the same allowance of salt and soot. Both crops did extremely well, and were very promising till the 18th of March, when from that time to the 1st of April—in ten days—the whole of the 15 vergées of wheat were destroyed. On examination, I found that it had been all cut within about an inch of the surface by the wireworm; *thereby proving that salt and soot could not kill these vermin.* About the middle of April the oats were sharing the same fate; when, one evening, complaining to a friend of my misfortunes, he advised me to try guano. Immediately I procured 1 cwt., which I had mixed with two bushels of *vraic* ashes, and sown over the piece. From that day the oats recovered, and, although there was not more than *one third of the plant left when the guano was applied, it tillered so luxuriantly, that it soon covered the ground.* The crop was very fine both in quantity and quality. I have been unable to ascertain if the guano killed the wireworm; but this I know, if it did not destroy it, it drove it away out of the reach of the roots.

ON GRASS LANDS.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

There is, perhaps, no portion of the farmer's land which is, in general, so carelessly attended to as that which is devoted to the production of grass. The cultivator, indeed, seems, by his neglect of them, too often to entirely agree with the observation of some of the older writers, that "the grasses are nature's care;" for, to the efforts of nature they are too generally left. Witness the vast majority of pasture lands, of which most farms contain a portion; notice how ill they are treated—fed at all seasons, the resting place in need of all the lean stock of the farm, trodden down hard, or poached with the feet of cattle, long after they have in autumn ceased to yield an useful herbage, seldom dressed with manure, still more rarely assisted with the seeds of the superior grasses. And, moreover, consider what little attention is commonly paid to the drainage of such lands. It is only, indeed, when the rush tribe copiously appears, that the farmer is led to believe, that considerable advantage would in *that* spot arise from the removal of the stagnant water. And yet every owner of the best cultivated English meads, such as those of the valleys of the Kenett, the Itchen, and the Wiltshire Avon, are well aware, that the complete removal of the water from these celebrated water meadows is one of the most important objects which he has to accomplish. Then, again, the produce of old grass lands is generally very materially increased by loosening the soil, either by the fork or by the sub-turf plough; for, by these means, the roots of the grasses are assisted in their search of food, and the access to them of the gases and aqueous vapour of the atmosphere is materially facilitated; advantages which are not so generally understood by the farmers of England as is desirable. Neither is it generally remembered with the exactness the importance of the fact deserves, how very considerably different grasses, and even the same grasses at different seasons, vary in their nutritive properties; and yet this difference is much more material than many persons suspect. I will, therefore, with the hope that a knowledge of some of these facts may be thereby more generally diffused, here repeat and enlarge upon what I have in another place had occasion to remark. And, in so doing, I would have the intelligent farmer understand that these are merely intended as suggestions to stimulate enquiry, and to bring to mind perhaps long since forgotten truths.—*(Farmer's Encyclopædia.)* I have already, in a previous volume of this Magazine (v. 7, p. 327), alluded to the irrigation system, its value, and the extension of which it is capable, and I cannot but again express my anxiety, that at the meeting of the Royal Agricultural Society at Southampton, in July next, the farmers from distant parts of England will not neglect to carefully examine the excellent water meadows of the banks of the Itchen and the Test, which discharge their waters into the bay in the immediate vicinity of that rapidly rising town; for their formation and large produce affords many instructive lessons for the better management of meadow land.

The neglect by the farmer of the ordinary grasses in his possession long since engaged the attention of Professor Martyn. "Grass," he remarked, "vulgarly forms one single idea; and a husbandman, when he is looking over his enclosure, does not dream that there are upwards of three hundred species of grass, of which thirty or forty may be at present under his eye. They have scarcely had a name besides the general one till within these twenty years, and the few particular names which have been given them, are far from having obtained general use, so that we may fairly assert that the knowledge of this most common and useful tribe of plants is yet in its infancy."—*Letters on Botany*, xiii.

It is certain, however, that since the period when Professor Martyn wrote, much has been done to add to our knowledge of the grasses. The botanist has shown that there are more than 130 distinct native species and varieties of grass in Great Britain, all possessing distinct properties, and varying in their degrees of value to the farmer from the most worthless to those on which his successful farming chiefly depends. The researches, too, commenced by the late Duke of Bedford, and carried on for a series of years in the grass-garden at Woburn, have added very materially to our stock of knowledge concerning these plants; for, instituted with a public object, and under the careful and skilful management of one of my earliest correspondents, the late Mr. George Sinclair, the results were given by him to the public in the "*Hortus Gramineus Woburnensis*"—a valuable and elaborate work, to which I am largely indebted for the matter of this paper.

In choosing the mixture of grass seeds most valuable for the farmer's soil, many considerations must be taken into the calculation; not only the nature of the soil and the supply of water to which its habits are the best adapted must be carefully considered, but also the objects which the farmer has in view; thus the meadow foxtail *(Alopecurus pratensis)*, although an early, nutritive, and productive grass, requires more than two years to arrive at perfection: it is therefore better adapted for permanent pasture than for the alternate husbandry. And then again the meadow cat's-tail *(Phleum pratense)*, although remarkable for producing the most nutritious culms of all the grasses, and that, too, in a considerable bulk, yet its aftermath is of very little value. Valuable, therefore, as it is for hay, it is of little consideration for feeding purposes, if sown by itself; it should always, therefore, be combined with other grasses. And again, the cock's-foot *(Dactylis glomerata)*, which soon arrives at perfection, and yields early and late a profusion of leaves which are highly nutritive, has culms or stalks of little value; it is a grass therefore most profitable for feeding purposes. "Under these different relations, therefore," says Mr. G. Sinclair, "a grass should be considered, before it is absolutely rejected or indiscriminately recommended.

The knowledge of the relative nutritive matters contained in different grasses, will also not only be a highly important object of research as connected with its feeding properties, but as throwing considerable light on the powers of the different grasses to exhaust or impoverish the soil, a question which the farmer will find very important when he is studying the best rotation of crops to which his land is adapted. A much more considerable general knowledge, with regard to the composition of plants, may be derived from even an examination of their external appearance, than many persons would deem possible. The following are some of the general results of the observations of Sinclair:—

"1. Grasses which have culms with swollen joints, leaves thick and succulent, and flowers with downy husks, contain greater proportions of sugar and mucilage.

"2. When this structure is of a light glaucous colour, the sugar is generally in excess.

"3. Grasses which have culms with small joints, flowers pointed, collected into a spike, or spike-like panicle, leaves thin, flat and rough, and of a light green colour, contain a greater proportion of extractive matter.

"4. Grasses which have culms furnished with numerous joints, leaves smooth and succulent, flowers in a spike or close panicle, with florets blunt and large, contain most gluten and mucilage.

"5. When this structure is of a glaucous colour, and the florets woolly, sugar is in the next proportion to mucilage.

"6. Grasses which have their flowers in a panicle, florets pointed or awned, joints of the culm smooth and succulent, contain most mucilage and extractive.

"7. Grasses with flowers in a panicle, florets thinly scattered, pointed or furnished with long awns, culms lofty, with leaves flat and rough, contain a greater proportion of saline matter and bitter extractive.

"8. Grasses with strong creeping roots, culms few, leaves flat and rough, flower in a spike, contain a greater proportion of bitter extract, with mucilage."—*Hort. Gram. Wob.*, p. 42.

The following table will show how very materially different grasses vary in their nutritive properties. In the first part of April, 1920 grains of the leaves of various grasses, &c., afford, according to Mr. G. Sinclair, the following proportions of nutritive matter:—(*Hort. Gram. Wob.* p. 239).

	Grains.
Meadow foxtail grass	96
Tall oat-like soft grass	120
Sweet-scented vernal	52
Round panicled cock's-foot	80
Perennial ray grass	70
Tall fescue	94
Meadow fescue	96
Crested dog's-tail	88
Woolly soft grass	80
Creeping soft grass	90
Meadow cat's-tail	80
Fertile meadow grass	70
Nerved meadow grass	76
Smooth awnless brome grass	84
Wood meadow grass	68
Smooth fescue	70
Long-awned sheep's fescue	102
Darnel-like fescue	110
Creeping bent or fiorin	42
Wood fiorin	62
Yellow vetchling	40
Rough-stalked meadow grass	80
Broad-leaved red clover	80
White or Dutch clover	64
Common quaking grass	54
Greater bird's-foot trefoil	60
Long-rooted clover	76
Lucern	90
Burnet	100
Cow parsnip	90

It may not be uninteresting to the cultivator to learn of what these nutritive matters consist. The following is the result of Mr. Sinclair's examinations:—

100 *Grains of the nutritive matter of the*	Mucilage or Starch.	Saccharine Matter or Sugar.	Gluten.	Bitter Extractive and Saline Matters.
Meadow foxtail consist of	64	8	—	28
Meadow fescue	59	20	—	20
Ray grass	65	7	—	28
Meadow cat's-tail	74	10	—	16
Cock's-foot	59	11	—	30
Meadow oat	80	10	—	10
White clover, in flower	77	2	7	14
Red clover, in flower	79	8	5	8
Tares	68	25	—	7
Fiorin (*Agrostis Stolonifera*)	55	5	—	40

3000 *Grains of the Green Herbage of*	Woody or Indigestible Fibre.	Water.	Nutritive Matter.
Tares consist of	557	2250	193
White clover	470	2430	100
Cock's-foot grass	1135	1740	125
Meadow fescue	1260	1590	150

The chemical composition of the grasses varies very materially in the progress of their growth—a fact well worthy of the farmer's serious attention, in more ways than one. "I found," says Davy, "in all the trials I made, the largest quantity of truly nutritive matter when the seed was ripe, and least bitter extract and saline matter; most extract and saline matter in the autumnal crop, and most saccharine matter in proportion to the other ingredients in the crop cut at the time of flowering. I shall give one instance. 100 parts of the soluble matter obtained from the round-headed cock's-foot grass, (*Dactylis glomerata*), cut in flower, afforded of—

	Parts.
Sugar	18
Mucilage	67
Extract saline matters, &c.	15
	100

100 parts of the soluble matter from the seed-crop afforded—

	Parts.
Sugar	9
Mucilage	85
Extract, &c.	6
	100

100 parts of soluble matter from the aftermath crop gave of—

	Parts.
Sugar	11
Mucilage	59
Extract	30
	100

The collection of the seeds of the grasses is an operation which has only of late years been regarded with anything like the patient attention which its importance deserves. "The ripening of the seeds of the essential grasses," observed Sinclair, "takes place at three different periods of the season, or if they are classed according to the time about which each species ripens its seed, they will form three divisions or groups; the first, consisting of the earliest species, perfect their seed about the end of June, such as the sweet-scented vernal grass and the narrow-leaved meadow grass; the second, consisting of the sheep's fescue grass, and others, about the end of July; and the third, such as the fiorin grass, and others, about the first or second week in September, as may be seen from the following table of the average periods at which different species of grasses ripen their seed, drawn up by the late Mr. G. Sinclair, from the details of ten years' practical observation and experiment.

In April there are commonly in perfection the seeds of the annual meadow grass *(Poa annua)* from the 10th to winter frosts.

June.

Sweet-scented vernal grass, *Anthoxanthum odoratum*, from the	10th	to	20th
Soft annual brome grass, *Bromus mollis*	12	—	20
Silver hair, hair grass, *Aira caryophylla*	15	—	20
Bitter vernal grass, *Anthoxanthum amarum*	15	—	20
Sheathed cotton grass, *Eriophorum vaginatam*	18	—	20
Narrow-leaved cotton grass, *Eriophorum Angustifolium*	20	—	30
One-flowered melic grass, *Melica uniflora*	18	—	24
Spring millet grass, *Milium vernale*	18	—	25
Alpine meadow grass, *Poa Alpina*	18	—	24
Narrow-leaved meadow grass, *Poa angustifolia*	18	—	24
Blue meadow grass, *Sesteria cærulea*	18	—	24
Meadow foxtail grass, *Alopecurus pratensis*	30		
Sweet-scented soft grass (abortive generally), *Holcus odoratus repens*	20		
Barley-like fescue, *Festuca ovina Cordiformis*	20	to	July 20

In July.

Small-flowered oat grass, *Avena parviflora*	4th	to	10th
Long-flowered, *Bromus longiflorus*	4	—	13
Glaucous fescue, *Festuca Glauca*	4	—	24
Hungarian, —— *Pannonica*	4	—	17
Hard wheat grass, *Triticum nardus*	4	—	17
Smooth meadow grass, *Poa pratensis*	10		
Woolly soft grass, *Holcus lanatus*	12	—	24
Creeping soft grass, —— *mollis*	14	—	26
Field or meadow brome grass, *Bromus arvensis*	7		
Jointed fox-tail, *Alopecurus geniculatus*	7	—	26

Bulbous meadow grass, *Poa bulbosus*	11th	to	—
Yellow oat grass, *Avena pubescens*	15	—	25
Blue meadow grass, *Poa cærulea*	16		
Nodding panicled brome grass, *Bromus tectorum*	16		
Crested dog's-tail, *Cynosurus cristatus*	16	—	30
Horn of plenty, *Cornucopia cucullatum*	16		
Roundheaded cock's-foot grass, *Dactyllis glomerata*	19	—	30
Glaucous cock's-foot grass, ——— *glaucescens*	20		
Striped cock's-foot grass, ——— *variegata*	20		
Ditto, American variety, ——— *Americana var.*	22		
Wood fescue, *Festuca dumetorum*	19	—	30
Perennial rye grass, *Lolium perenne*	15		
Russell grass, ——— *Russellianum*	20		
Reflexed meadow grass, *Poa distans*	16		
Rigid meadow grass, —— *rigida*	16		
Rough-stalked meadow grass, *Poa trivialis*	16		
Smooth-leaved fescue grass, *Festuca glabra var.*	12		
Creeping fescue grass, ——— *rubra*	12	—	25
Common quaking grass, *Briza media*	12	—	20
Melitot clover, *Trifolium melitotus officinalis*	14		
Upright brome grass, *Bromus erectus*	20		
Bush vetch, *Vicia sepium*	24	—	20
Sheep's fescue grass, *Festuca ovina*	28		
Early hair grass, *Aira præcox*	27		
Water hair grass, —— *aquatica*	26		
Crested hair grass, *Aira cristata*	29		
Bromus giganteus	24		
Slender oat grass, *Avena fragilis*	24		
Eastern oat grass, —— *orientalis*	25	—	30
Meadow oat grass, —— *pratense*	24		
Two-rowed brome grass, *Bromus distachyos*	30		
Wall brome grass, ——— *diandrus*	21		
Tongue formed, ——— *ligusticus*	30		
Large panicled, ——— *maximus*	21		
Flat spikeled, ——— *uniolides*	21		
Wood millet grass, *Milium effusum*	21		
Brome-like fescue grass, *Festuca bromoides*	21		
Hardish fescue grass, *Festuca duriuscula*	30		
Crested brome grass, *Bromus cristatus*	30		
Slender fescue grass, *Festuca gracilis*	30		
Slender sheep's fescue, ——— *ovina tenuis*	30		
Meadow fescue grass, ——— *pratensis*	30		
Slender-leaved fescue, ——— *tenuifolia*	30		
Viviparous fescue, ——— *vivipara*	30		
Sand canary grass, *Phalaris arenaria*	30		
Ciliated melic grass, *Melica ciliàta*	27	—	31
Nerved meadow grass, *Poa nervata*	30		
Rye grass-like fescue, *Festuca Loliacea*	21		
Lesser meadow-cat's-tail, *Phleum pratense minus*	25		
Linear spiked, *Cynosurus erucæformis*	21		

Meadow cat's-tail, *Phleum pratense*	25th	to	—
Wood meadow grass, *Poa nemoralis*	30		
Bulbous pointed cat's-tail, *Phleum nodosum*	30		
Fertile meadow grass, *Poa fertilis*	30		
Larger bird-foot trefoil, *Lotus major*	30		
Smaller ——— —— *minor*	30		
Capon's-tail fescue, *Festuca myurus*	29		
Sea-green meadow grass, *Poa cæsia*	27		
Way bennet, wall-barley, *Hordeum murinum*	30		
Thovin's vetch, *Vicia Thovinii*	30		
Welsh fescue grass, *Festuca Cambrica*	20	—	30
Upright vetch, *Vicia erectus*	20	—	30

In August.

Crested hair grass, *Aira cristata*	2		
Giant lyme grass, *Elymus gigantes*	2		
Decumbent meadow grass, *Poa decumbens*	3		
Spelt wheat grass, *Triticum spelta*	3		
Slender ——— ——— *tenue*	4		
Bearded ——— ——— *canimum*	4		
Awnless ——— ——— *canimum, var*	4		
Common bent grass, *Agrostis vulgaris*	4		
Upright mat grass, *Nardus stricta*	5		
Small spurious tare, *Ervum ervilla*	4		
Broad-leaved oat grass, *Avena planiculmis*	6		
Hairy tare, *Ervum Hirsutum*	6		
Four-seeded tare, *Ervum tretraspermum*	6		
Glaucous meadow grass, *Poa glauca*	6		
Procumbent ——— —— *procumbens*	6		
Long-rooted clover, *Trifolium macrorhizum*	6		
Wood bent grass, *Agrostis sylvaticus*	6		
Tall fertile fescue grass, *Festuca elatior fertilis*	6		
Many-flowering brome grass, *Bromus multiflorus*	5		
Philadelphian lyme grass, *Elymus Philadelphicus*	6	to	20
Sordid vetch, *Vicia sordida*	6	—	20
Slender-leaved, *Vicia tenuifolia*	6		
Beardless tall oat grass, *Holcus avenaceous maticus*	7		
Red brome grass, *Bromus rubens*	9		
Bauhin's melic grass, *Melica Bauhini*	9		
Fox-tail like fescue, *Festuca alopecuroides*	10	—	23
Hedge-hog lyme grass, *Elymus Hystrix*	10		
Barren brome grass, *Bromus sterilis*	10		
Jointed lyme grass, *Elymus*	10		
Golden oat grass, *Avena flavescens*	20		
Fine panicled grass, *Arundo calamagrostis*	21	—	30
Meadow barley grass, *Hordeum pratense*	21		
Narrow-leaved brome, *Bromus angustifolia*	24		
Slender rye grass, *Lolium tenue*	24		
Spear panicled, *Bromus lanceolatus*	24		
Saintfoin	24		

Winged brome grass, *Bromus pinnatus*	28 to Sep. 5
Bundled-leaved bent, *Agrostis canina fascicularis*	29
Couch grass, *Triticum repens*	30
Wood vetch, *Vicia sylvatica*	30

In September.

Tufted vetch, *Vicia cracca*	4 to 12
Fox-tail oat grass, *Avena alopecurides*	5 — 12
Awnless brown bent, *Agrostis canina*	5
Couch bent grass, *Agrostis alba*	6 — 15
Fiorin grass, *Agrostis Stolonifera*	8

And many others.

In October.

Common reed grass, *Arundo phragmites*	10 to 15
American cock's-foot, *Dactylis cynosuroides*	10
Stiff wheat grass, *Triticum rigidum*	12 — 13

And five or six others.—*Sinclair's Hor. Gram. Wob.*, p. 35.

Of these grasses the chief and most useful varieties are always kept on sale by the leading seedsmen. These varieties are all, I believe, comprehended in the following list:—

Agrostis caninum.
Agrostis stolonifera.
Alopecurus pratensis.
Anthoxanthum odoratum.
Avena flavescens.
Avena pratensis.
Briza media.
Bromus arvensis.
Cow-grass.
Cynosurus cristatus.
Dactylis glomerata.
Festuca cambrica.
Festuca duriuscula.
Festuca fluitans.
Festuca glabra.
Festuca heterophylla.
Festuca hordeiformis.
Festuca ovina.
Festuca pratensis.
Festuca rubra.
Festuca sylvatica.
Festuca tenuifolia.
Holcus avenaceus.
Holcus lanatus.
Hordeum pratensis.
Lolium perenne.
Perennial red clover.
Phleum pratensis.
Poa annua.
Poa cœrulea.
Poa fertilis.
Poa nemoralis.
Poa nervata.
Poa pratensis.
Poa trivialis.
Red suckling.
Rib-grass.
Trefoil.
White or Dutch clover.
Yarrow.

From some experiments given in the 2nd vol. of the *Highland Soc. Trans.*, p. 250, by Messrs. Lawson & Co., it would seem that the raising of the seeds of the artificial grasses is attended with considerable profit.

The late Mr. Blakie suggested a very excellent plan for saving the seeds of down grasses, or of those grasses which are peculiarly adapted for elevated dry soils, (*Farmer's Jour.*, March 17, 1823), viz.—to fence off a sufficient portion of these pastures, choosing such portions as have the best kind of grasses, and to mow these enclosures for seed in succession, at three, four, or more different periods of the season. By these means, said Mr. G. Sinclair, (*Hort. Gram. Wob.*, p. 39), the seeds of the early midsummer and late vegetating grasses will be obtained, and which could not, it is evident, be obtained by one mowing in one season. This is, he adds, a very highly valuable mode of obtaining the seeds of those grasses adapted for downs, which, to cultivate separately for the seed, would be a fruitless undertaking. Fence the selected turf well early in the season, and prepare for mowing by picking the stones or rubbish from the surface, and by rolling. As the seeds ripen, employ a careful bird-watcher. Mow in dry favourable weather. If the swaths are heavy, they should be turned with great caution, so as not to shake out the ripe seeds. As soon as the mowing is dry, the seed should be immediately thrashed out on a close-woven cloth in the field, and on a dry day; and when a certain portion of the later grasses ripen their seed, another mowing should be effected, and so on until all the grasses in the enclosure have perfected their seed.—*Hort. Gram. Wob.*

As every different soil, continues Sinclair in another portion of his invaluable work, produces grasses peculiar to itself, and as no other kinds can be established or cultivated upon it without first changing its nature to resemble that which produced the kind of grasses we wish to introduce, it becomes a point of the first importance in making experiments on different species of this numerous family of plants, and in stating the results, to determine with sufficient accuracy the nature of the soil or different soils employed. The basis of every improvement in the cultivation of grasses is to sow the seeds of those species only which are adapted to the soil, or to change the nature of unsuitable soils to that which is fitted for the growth of grasses most desirable to be cultivated; and, unless this important point is in the first place attended to, disappointment rather than success may be expected to follow the labours of the farmer.

1. *Of the Grasses of rich Natural Pastures.*—Every farmer is aware that peculiar grasses are the productive tenants of his rich natural pastures, and that if these are ploughed up, and a course of grain crops taken from the soil, that it requires a considerable period before the turf with which it was formerly covered can be restored. George Sinclair carefully noted this fact, and examined not altogether unsuccessfully its cause. He observed that the different grasses and other plants which compose the produce of the richest natural pastures are in number twenty-

six; and that from the spring to the end of autumn there is not a month that does not constitute the particular season of luxuriance of one or more of these grasses: hence proceeds the constant supply of rich succulent herbage throughout the whole of the season, a circumstance which but seldom or never happens in artificial pastures where the herbage consists of two or three varieties only. The plants which usually tenant these best natural pastures are the meadow fox-tail, round cock's-foot, meadow fescue, meadow cat's-tail, sweet-scented vernal grass, tall oat-like soft grass, creeping vetch, rye grass, field brome grass, annual meadow or Suffolk grass, meadow oat grass. These yield the principal grass in the spring, and a chief portion of that of the summer. Then again we find the yellow oat grass, meadow barley, crested dog's-tail, hard fescue, rough-stalked meadow grass, smooth-stalked meadow grass, woolly soft grass, perennial red clover, white or Dutch clover, yellow vetch or meadow lathyrus, smooth fescue, which yield the principal portion of the summer and autumn produce. Lastly we find the yarrow, creeping bent or fiorin, marsh bent grass, creeping wheat grass, or couch, which vegetate most vigorously in the autumn. Besides these, continues Sinclair, in the richest natural pastures are invariably found the butter cup, (*Ranunculus acris*) rib grass, or ribwort plantain (*Plantago lanceolatu*), and sorrel dock (*Kumex acetosa*), of which, however, except in cases of necessity, live stock only eat the rib grass.

To examine the nature of the change produced on rich pasture land by a course of grain crops, Mr. Sinclair made the following valuable experiments:—A space of two square yards of rich ancient pasture land was dug to the depth of eight inches. 400 grains of this soil freed from moisture and the green vegetable fibres, contained—

	Grains.
Calcareous and silicious sand	102
Decomposing vegetable matter, and particles of roots	55
Carbonate of lime (chalk)	160
Silica (flint)	50
Alumina (clay)	25
Oxide of iron	4
Soluble vegetable matter and sulphate of lime (gypsum)	4
	400

This soil was then cropped for five seasons alternately with 1, oats, 2, potatoes, 3, wheat, 4, carrots, 5, wheat. It was then examined, to ascertain what change it had undergone by bearing these crops. It then appeared to consist of—

	Grains.
Calcareous and silicious sand	100
Decomposing vegetable matter	48
Carbonate of lime (chalk)	159
Silica (flint)	57
Alumina (clay)	26
Oxide of iron	5
Soluble vegetable and saline matter	3
	398
Loss	2
	400

Thus the earthy portion of the soil had undergone but little change; but it had sustained a very considerable diminution of its decomposing vegetable and animal matters, particularly when it is considered that the turf also was incorporated with the soil. Manure was now for the first time applied, and with the wheat stubble dug in to the depth of six inches. The surface was then made fine with a rake, and sown with a mixture of the following grass seeds, at the rate of five bushels to the acre:—Meadow fescue, meadow fox-tail, round cock's-foot, tall oat-like soft grass, creeping vetch, rye grass, meadow cat's-tail, crested dog's-tail, yellow oat, meadow oat, hard fescue, smooth-stalked meadow grass, fertile meadow grass, nerved meadow grass, cow clover, (trifolium medium), Dutch or white clover, fiorin, marsh bent. These were sown on the 23rd of August, 1813. They all vegetated before the first week of October, except the creeping vetch (*Vicia sepium*), which did not germinate till the autumn of 1814. Before the frost set in they had a top-dressing with a compost of rotten dung, lime, and vegetable mould, laid on in a fine and dry state, and rolled, and again rolled in February. The plants sprang earlier than those of the old pasture (a circumstance common to young plants in general). In the first week of July the produce was cut and weighed; it amounted to one-eighth more than the produce of the ground in its original state. The aftermath however of the seedling grasses weighed one-fifth less than that of the natural pasture. But in 1815, upon cutting and weighing the grass in the first weeks of June and August, and again in the middle of September, the total weight of these three crops exceeded that of the old turf exactly in the proportion of nine to eight.—*Hort. Gram. Wob.*, p. 131.

2. *The Grasses which are the Natural Tenants of Dry Sandy and Elevated Soils.*—These, according to Sinclair, are the sheep's fescue, viviparous fescue, purple fescue, pubescent fescue, glaucous fescue, wall fescue, wall barley, fine bent, brown bent, lobed bent, rock bent, snowy bent,

purple bent, tufted-leaved bent, waved hair grass, feather grass, slender fox-tail, hairy oat grass, blue melic grass, upright mat grass, blood-coloured panic grass, green panic grass, barren brome grass, crested brome grass, upright annual brome grass, nodding brome grass, Alpine meadow grass, Alpine fox-tail grass, blue moor grass, crested hair grass, panicled cat's-tail grass, reflexed meadow grass, flat-stalked meadow grass, meadow barley, bird's-foot clover, larger bird's-foot clover, trefoil or nonsuch, saintfoin, soft brome grass, creeping soft grass, white or Dutch clover.—*Hort. Gram. Wob.*, 254.

When these sandy upland soils are improved by the application of clay or marl, they are then capable of supporting a very superior description of grasses to these, and the following varieties, says Sinclair, should then be sown; for experience will prove, that, under such circumstances, they are the best for this purpose (*Ibid*, p. 337).

Barley-like sheep's fescue	3	pecks.
Cock's-foot grass	3	"
Crested dog's-tail grass	1	"
Yellow oat grass	2	"
Rye grass	1	"
Flat-stalked meadow grass	1	"
Various leaved fescue	1½	"
Hard fescue	2	"
Lesser bird's-foot trefoil	1	lb.
White clover	3	lbs.

3. *The Grasses of Bogs, or other very Moist Soils.*—These are commonly of the most worthless description to the cultivator. They are chiefly the marsh bent, awnless brown bent, awned creeping bent, smaller leaved creeping bent, creeping-rooted bent, white bent, flote fescue, tall fescue, turfy hair grass, knee-jointed fox-tail grass, water hair grass, water meadow grass, long-leaved cotton grass, and the sheathed cotton grass.—*Hort. Gram. Wob.*, p. 340.

The Grasses of Water Meadows.—All the superior perennial grasses, observes Sinclair, thrive under irrigation when the meadow is properly formed. The following species of grass I have invariably found to constitute the produce of the *best* water meadows—meadow fox-tail, round-panicled cock's-foot, field brome grass, meadow fescue—these occupied the crowns and sides of the ridges. The furrows were stocked with the creeping bent, marsh bent, hard fescue, lesser variety of meadow cat's-tail, woolly soft grass, rough-stalked meadow grass, meadow fescue, and a small admixture of other species, which were thinly scattered over every part of the ridge,—these were meadow barley, yellow or golden oat, crested dog's-tail, rye-grass, sweet-scented vernal grass, tufted vetch, with a larger proportion of the tall oat-like soft grass. The soil of the water meadows which produced the above grasses was either a deep active peat, incumbent on a silicious sand, or a sandy loam, on a chalky or gravelly subsoil. In some irrigated meadows where the ridges are formed nearly flat, and the soil consisted of a sandy loam, on a retentive clayey subsoil, the following grasses constituted the chief produce—crested dog's-tail, creeping-rooted soft grass, rye grass, meadow barley, tall oat-like soft grass, sweet-scented vernal and soft brome grass.—*Hort. Gram. Wob.*, p. 383.

The grasses best adapted for the alternate husbandry long attracted the attention of George Sinclair, (*Hort. Gram. Wob.*, p. 392), but he saw the difficulty of laying down any systematic rules which should be adapted for all soils and situations, and the demands for animal food; he hardly therefore made any very practical general observations. He gives us, however, among other valuable statements, the following little table of the relative value of three of the crops he had examined on similar soil.

	Produce.	*Lbs. per acre.*
Broad-leaved red clover	Herbage	49005
	Hay	12251
	Nutritive matter	1904
Lucern	Grass	70785
	Hay	28314
	Nutritive matter	1659
Saintfoin	Herbage	8848
	Hay	3539
	Nutritive matter	345

There are also some practical directions by Mr. P. Shirreff, in the *Quarterly Journal of Agriculture*, v. 2, p. 242, but they are only local in their nature; and there are some valuable remarks by Mr. W. S. Taunton, vol. 3, p. 406, upon the grasses of the Hampshire chalk formation; and by Mr. Gorrie, vol. 5, p. 515 of the same excellent periodical, upon the supposed coarse quality of certain grasses.

On the Grasses best adapted for Pasture during the Winter.—In the 4th volume of the *Trans. of the High. Soc.*, p. 31, is an essay on this subject, by the late Mr. George Sinclair. The following are the grasses he recommends as being productive of the most considerable quantity of winter's grass, and the proportion of seeds which he advises to be sown to produce such a pasture:—

Cock's-foot, *Dactylis glomerata*	4 pecks.
Meadow fescue, *Festuca pratensis*	3 „
Tall fertile meadow grass, *Festuca elatior fertilis*, only in very heavy soils constantly depastured with cattle.	

Meadow cat's-tail, or true Timothy grass, *Phleum pratense major*	¼ Peck.
Broad-leaved bent or fiorin, *Agrostis Stolonifera*	1 „
Tall oat grass, *Holcus avenaceus*	2 „
Woolly soft grass, *Holcus lanatus*, only in cases of considerable evation and poverty of soil.	
Pacey's perennial rye grass, *Lolium perenne*	3 „
Barnet, *Poteriam sanguisorba*	2 „
Cow grass, or perennial red clover, *Trifolium pratense perenne*	6 lbs.
White clover, *Trifolium repens*	8 „

Transplantation or Inoculation of Turf.—This plan, which is one in certain situations offering considerable advantages, is described in the *British Husbandry*, v. 2, p. 523; and by G. Sinclair, *Hort. Gram. Wob.*, p. 415. The mode of returning tillage land to permanent pasture, called transplanting, was first invented by Mr. Whitworth, of Acre House, Lincolnshire; and it was first practised to any extent by Mr. John Blomfield, of Warham, Norfolk. In laying down land to permanent pasture by this mode, it is essential that the soil should be free of the seeds and roots of weeds, and made perfectly clean by a summer fallow. The autumn is the best time for transplanting turf, and that as soon as the autumn rains have sufficiently moistened the turf to fit it for paring off clean; the roots of the grasses thus get established before the commencement of warm weather in the spring. It is also essential that the turf should be selected or taken from the very best pasture, for otherwise weeds and inferior grasses will be propagated. If the field from which the turf is to be taken to make the new pasture is intended to be broken up for a course of tillage crops, then the whole of the turf may be taken off and employed in forming the new pasture to the required extent. But should the field be required to remain in permanent pasture, a portion only of the turf must be taken from the field, and a sufficiency of the sward or grass plants left standing for that purpose. In the first of these cases Mr. Blakie directs a paring plough to be used; but if that cannot be conveniently obtained, a common plough, with the coulter and share made very sharp, will answer the purpose. A wheel plough is preferable, adds Sinclair, to a swing plough, for paring turfs, because it goes steadier, and cuts the turf more regularly. The turf should be cut about two inches and a-half thick, and 7, 8, or 9 inches wide, according to the nature of the turf-guage of the plough, and the width of the wing of the share. It is sometimes cross-cut into short lengths previous to the operation of paring; but this can only be effected when the turf is moist, and free from stones.

The cross-cutting is done by a scarifier with scimitar tines, the convex edges made very sharp, and faced to the work, and the implement heavily weighted, so as to press the tines a proper depth into the turf; but it is best in large flags. The turf is then carried in broad-wheeled carts to the field, at the rate of fifty cart-loads to an acre, placed in heaps, and then chopped into small pieces of about three inches square. The ground is then levelled with a scarifier, and the turf spread with shovels over the field. The pieces of turf are then placed or planted by women and children, and, by the foot or wooden rammer, pressed into the soil. One acre of turf, divided into pieces, will plant nine acres; each piece of turf standing nine inches apart. The expense per acre of this mode of converting arable land into pasture land is as follows:—say,

	Acres.	*Roods.*	*Poles.*
Extent of grass land clean pared off..............	1	2	18
Extent of arable land transplanted with the above.	11	0	15

Expense.	*£*	*s.*	*d.*
To ploughing or paring 1 acre, 2 roods, and 18 poles, at 10s. per acre....................................		16	1½
To carriage of 600 loads of turf, 50 days' work for one horse, at 3s. per day	7	10	0
To boys driving carts		19	8
To scarifying 11 acres, or 15 poles of ground, when covered with turf cut in pieces, at 2s. 6d. per acre ..	1	7	8½
To labourers, at 30s. per acre	16	12	9¾
	£27	6	4

Or £2 9s. 2¾d per acre.

Such are a few of the admirable results obtained from the researches of those scientific persons who have devoted their attention to the common grasses of agriculture. From these (and the farmer may be assured that many such are yet to be made) the accomplished cultivator may well feel additional reason to conclude that his grass lands are far indeed from having attained their maximum productiveness; for he will not fail to notice in how many ways increased fertility may be imparted to his pastures—by better seeds—improved drainage—more fertilizing dressings—and even by the partial loosening of the soil. Such remarks, too, may be useful to him in a still greater degree, if they suggest the additional reflection, that there are, in fact, no indications in any part of even the scientific modern farmer's land of the exhaustion of the resources of science for the improvement of the fertility of the soil.

14, GRAY'S INN SQUARE,
January, 1844.

THE ALPACA AND ITS SILKY WOOL.

> "The Alpaca is recommended by the Natural History Society of Liverpool, as a new breeding stock, not likely to interfere with sheep pasturage, and as being calculated to supply the manufacturer with another raw material of our own growth, applicable by its fine quality and glossiness to the purposes of silk; and thus not in the least intermeddling with either the growers of British sheep wool, worsted spinners, or woollen manufacturers."—*Walton on the Naturalization of the Alpaca*, 1841.

At a meeting of the Liverpool Polytechnic Society William Danson, Esq., of Liverpool, read a very interesting paper on the rise, progress, and extension of the alpaca manufactures; for the origin of which, he stated, the members were indebted to the late secretary of the society, Mr. Dircks, who had urged him to the present essay three months ago. He furnished a succinct view of the manufacture from the introduction of the wool to the present time, and exhibited many beautiful silky specimens, in various articles of wearing apparel. The article was first introduced as a marketable fabric by Mr. Benjamin Outram, a venerable and scientific manufacturer, of Greetland, near Halifax, who, twelve or fourteen years ago, sold it in the form of ladies' carriage shawls and cloakings, as curiosities. He had specially to order the wool from Peru, and it could then only be obtained at high prices, so that half a square of the cloth sold for £3 to £4. Several of the specimens exhibited had been in constant wear for upwards of eleven years. For two years the manufacture was necessarily limited. About 1832 his (Mr. D.'s) opinion was taken as to the properties and capabilities of the article, and he advised his merchant, Mr. J. J. Hegan, of the firm of Messrs. Hegan, Hall & Co., of Liverpool, that it might be safely imported at certain prices, and, if supplied in large quantities, would become an article of general use in our manufactures. Those gentlemen consequently wrote to their own house in Peru to buy and contract for all they could procure, at an unlimited price; and the official account of the subsequent imports from the country was as follows:—

	From Islay. Quintals.	*From Arica.* Quintals.
1834	57	None.
1835	1834	—
1836	1099	—
1837	3858	—
1838	4593	—
1839	8555	4700
1840	13000	3500
1841	9470	4230
1842	8260	5440
1843	10640	3260
	61356	21130

Being a total of 82,496 quintals, of 100 lbs. each, which amounted to 8,249,600 lbs.; and in 1841 there had been imported into Liverpool probably about 2,000,000 lbs., as in February alone 1,090,000 were introduced. Some also was brought to England from France and America, and during the above period a good deal was imported as sheeps' wool and llama wool; so that within seven years fully eight millions of pounds had been imported, constituting the foundation of the alpaca manufactures, the fabrics of which are now in such general use. The stocks of the raw material accumulated until 1839, when a speculative demand eased the market of perhaps £50,000 value, at 2s. to 8s. 6d. per lb.,—manufacture still going steadily on—when in September of that year the subject was brought before the British Association, at Birmingham, where specimens of its manufacture, black as jet (without dye), were exhibited, and tested by Mr. Addams, lecturer on chemistry, &c., who stated that the natural black colour could not be changed by chemical action.

Foreseeing the impossibility of obtaining anything like an adequate supply of the raw material from Peru to satisfy the demand of our manufacturers, Mr. Danson's attention was directed to the importation of the animals; and the subject was brought before the Natural History Society in that Royal Institution, from whose deliberations emanated the publication of the pamphlet on the "Naturalization of the Alpaca," patronized and sanctioned by the Earl of Derby, who had declared his unqualified opinion that the animal might be acclimated in this country, for the benefit of our manufacturers.* Copies of the pamphlet might be had at Mr. J. F. Cannell's, 18, Castle Street, Liverpool. Four living specimens of alpacas were exhibited at the Liverpool Mechanics' Institution in July, 1840, as well as at the meeting of the British Association in Glasgow the same year, and since then at the Liverpool Collegiate Institution.

In 1840 and 1841 the alpaca manufactures made the most rapid progress, and he now came to the epoch of their establishment as a national staple manufacture. In 1839 the yarns of alpaca were regularly sent to the French manufacturers, who employed them in their fabrics in imitation of silk, they being very much cheaper;[*] and its use was observable in the goods retailed in many of the towns and cities of the Continent, as recently noticed in the *Athenæum.* One manufacturer alone was using the wool weekly in quantities amounting to nearly double the annual production, according to the statistical table given, as the exports quoted were the accumulation of many years. Looking, therefore, to the extension of our alpaca manufactures, we must seek in vain to find an adequate supply from Peru, the animals being chiefly concentrated in one district, a great distance from the shipping ports, Islay and Arica being the only two from which any alpaca wool had been exported. In Lima and Valparaiso the animals were so scarce, that they were considered curiosities, as in England.

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* That there is no difficulty in rearing the alpaca in the British Islands will be seen by the following extracts from letters by Mr. Robert Bell, of Gunsboro', near Listowel, Kerry. September, 1843.—"The young alpaca, 4 months old, bred on this farm, is as fat as any sheep I ever saw, and has wool on it 6 inches long, exceeding silky, and fine as Vicuna, fully 5 lbs. weight. The old ones were last shorn in April, 1841, at Harrow Hall, Cheshire. They each have fleeces of upwards of 20 lbs., remarkably fine. They have been out night and day, winter and summer—very healthy, and never ramble from their hill pasture."—February, 1844. "The young copulated at 8 months old."

The alpaca manufactures were extending in Scotland as well as in Ireland. He (Mr. D.) had letters from Inverness, in the north of Scotland, for yarns to beautify the Scotch tartan manufactures; and also from the county of Kerry, in the south of Ireland, where the refuse of alpaca wool was spun by the mountaineers into hosiery and other fabrics. Thus were the alpaca manufactures extending rapidly throughout Great Britain.

"Everything," said Mr. Danson, "has been done by the wool-stapler and manufacturer to depreciate the raw material, as English wool was constantly falling, and they, not being accustomed to this new silky wool, felt timid in buying, as it commanded more than double the price of English fleece wool, which was, at the clip season of 1843, only 8d. to 10d. per lb., whilst the alpaca ruled 18d. to 2s. per lb. It is now (March, 1844), white, 2s. 6d.; black, brown, and grey, 20d. to 2s.[†] The alpaca manufactures command a free sale in the London, Yorkshire, Manchester, Paisley, and Glasgow markets; and the fabrics in mouselin-de-laine, Chusan crapes, chene, cloakings, 'Norwich novelties de sarsenet,' hosiery, coats, surtouts, cravats, vests, and fringes, as well as mixing with sewing silks, and other innumerable articles are of this fine material, exhibiting the skill and enterprize of the British manufacturer."

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[*] "The yarns spun from the alpaca are already sent to France in large quantities, at from 6/ @ 12/6 ⅌ ℔; the price of the raw alpaca wool being now 2/ @ 2/6 ⅌ ℔."—*Transactions of Brokers' Association*, 1839, p. 92.

[†] "A good demand for alpaca wool for export to Belgium and France, and £30,000 worth sold in October, 1843, at about 2/ ⅌ ℔. £30,000 worth also taken by English consumers: half the value bought to arrive, at—white, 2/6; black, brown, and gray, 20d. @ 2/6 ⅌ ℔."—*Liverpool Report*, 31st Dec., 1843.

Mr. D. next noticed the difficulties attending the dyeing of delicate colours in this wool—such as royal blues, scarlet, greens, and oranges, and which has been completely overcome, from time to time, as indicated by the different and beautiful colours in the mouseline-de-laine and ladies' dresses. One of the latter was exhibited, and cost only fifty shillings. The royal blue was a splendid specimen; some of them had been in use in his family for four years. He then showed twenty-four Peruvian costume drawings just received from a friend at Arica, in which the colours of the garments were beautiful. He also exhibited a species of baize made in England, to supersede the alpaca domestic manufactures of the country, and considered it only fair that we should take their fine soft wool in exchange. He showed a variety of vests, stocks, &c. of the alpaca, which had been in wear for years, and which appeared as rich and glossy as silk, and exceedingly durable; also specimens of the wool in its raw state, including a sample (staple) of black, taken from a black alpaca, exhihited at the Royal English Agricultural Show in Liverpool, in July, 1841, belonging to the Earl of Derby; and Mr. Foot, his lordship's farm agent, stated that the animal had 17 lb. of wool on it, which is worth 2s. 6d. per lb., and very saleable; whereas the usual average of the fleece of a Scotch sheep is but 6 lbs., and the value of it 4½d. per lb. and bad to sell. The alpaca wool alluded to appeared to be upwards of a foot in length of staple. A dozen specimens of beautifully figured shawls were also exhibited, splendidly worked in flowers. These were only 16s. each; and black and other colours of figured and plain alpaca manufactures, called Orleans cloths, value 2s. to 3s. per yard, in imitation of silk, well calculated for ladies' dresses. The shopkeepers did not know them as alpaca manufactures.

Mr. Danson concluded by inviting the company to an inspection of the different articles, which were examined with much attention, and excited great interest.

BOTLEY TURNIP SHOW.

The usual quarterly dinner was held at the Dolphin Inn, Botley, Hampshire, when the first of the two prizes offered by Mr. W. R. Le Jeune for the best Swedish and the best common turnips produced from any sort of artificial manures, was delivered to the successful competitor, Mr. Blundell, of Bursledon. The room was well filled. In the absence of J. W. Warner, Esq., of Steeple Court, Mr. W. Godrich presided, and the vice chair was occupied by Mr. J. Warner, jun.

The chairman in a complimentary speech proposed "The health of Mr. J. W. Warner," who was prevented attending the meeting by the recent decease of his father. Mr. Warner, jun., acknowledged the toast on the part of his father.

The chairman said, the principal feature of their meeting that day was the presentation of the piece of plate offered as a premium by Mr. W. R. Le Jeune, for the best piece of Swedish turnips of not less than five acres, the turnips to be produced from any sort or sorts of artificial manures, used either mixed or separately. The judges were Mr. J. Warner, jun., of Botley, and Mr. Cawte, of Titchfield; and those gentlemen awarded the prize to Mr. Blundell, than whom no one could deserve it better, not only for the merits of his turnips, but because he was a thorough practical agriculturist. The second prize, £2 for the best field of any kind of common turnips of not less than five acres, to be produced also from any sort or sorts of artificial manures, either mixed or separately, was awarded to Mr. J. W. Warner, but he had generously returned it, to be again competed for. Mr. Blundell had obtained this prize by the union of study and practice, and they would esteem it a favour if he would communicate the nature and result of his experiments on turnip culture. He was always interested in visiting Mr. B.'s farm. Mr. B. had eyes of superior power to those of other men, and needed no subsoil plough to tell him the quality of the soil, for he could see five feet below the surface of his land; at least, he acted with such judgment and success, that it seemed as if he possessed the powers now attributed to him. He would therefore propose "Mr. Blundell's health," with three times three.

Mr. Blundell expressed the pleasure he felt in receiving such warm expressions of feeling from those whom he so highly respected. He did not assume the possession of any particular knowledge on the subject. He had great taste for agricultural pursuits—had made himself acquainted with the experiments of most men, and knew that a great portion of those experiments were not to be depended upon. Time, in fact, is not appropriated to the work; many have not inclination or taste enough to become experimental agriculturists. In contending for the turnip prize he had taken great pains to become successful, and he would not pretend that he had done so to serve the community, but in truth to benefit himself. He wished to ascertain which was the most valuable manure for turnips at the same comparative expense; he had not been able exactly to equalise the cost, but the disparity was very small. Mr. Blundell then proceeded to read a paper he had drawn up, containing a statement of an experiment for the purpose of proving the comparative value of different artificial manures for turnips, made in the year 1843.

The paper detailed the extent of land and nature of soil, the kind and quantity of manure, cost, time of drilling, sort of turnip, number of roots per pole, and the weight per acre. This latter portion of the statement is introduced for the purpose of showing the greatest weight per acre given by 82 roots per pole, as compared with 100, or the distance of 20 inches apart, as compared with 17 inches in the rows, the distance between the rows being the same—viz., 24 inches.

Experiment No. 1.—The land, one acre of deep loam on brick earth. Manure used, 12 bushels of bones, £1 10s., and 12 bushels of ashes, 3s.; total, £1 13s. The time of drilling was the 17th of June; the sort of turnip, Skirving's purple-top swede; the number of roots per pole, 117; the weight per acre, 20 tons, 14 cwt. and 13 lb. These were drilled on the level; the distance between the roots being 24 inches.

Experiment No. 2.—On an acre of the same land as No. 6. The manure, 2 cwt. of guano, £1 9s. 6d., and 20 bushels of ashes, 5s.; total, £1 14s. 6d. Time of drilling and sort of turnips the same as in the first experiment. The number of roots per pole, 82; the produce weight per acre, 20 tons, 12 cwt. and 96 lb. Drilled as in the previous experiment.

Another acre of the same land was treated in the same way, but with 100 roots per pole, the weight per acre being 19 tons, 11 cwt. and 48 lb. Drilling the same.

Experiment No. 3.—The land the same. Manure, 16 bushels of Clark's compost, £1 10s., and 8 bushels of ashes, 2s.; total, £1 12s. Time of drilling the same, June 17th; the same sort of turnip; number of roots per pole, 100; weight per acre, 17 tons, 11 cwt. and 48 lbs. Drilled as before.

Mr. Blundell said his conviction was, that the greater the distance between the rows, the greater would be the weight. In the third experiment, Clark's compost was used, at a less expense than the two first, but the produce was less by two and three tons. The field in which the experiments were tried was the same, so that nothing could be fairer. He was induced to lay much stress upon guano, because he wished to satisfy himself upon the point of advantage in sowing wide; by doing so they had a greater facility in hoeing and clearance of weeds and all other work. His object also had been to ascertain whether the larger roots had not an advantage over the smaller. In that respect they must be guided by calculations derived from other sources. He had collected them from the reports of the Royal Agricultural Society. Mr. Blundell proceeded to read a table showing the nutritive power of different roots to be in proportion to their specific gravity. Thus of turnips, in 17 roots the specific gravity was 898·6, and the amount of nutritive matter in 1000 parts, 42. Of swedes, in 24 roots the specific gravity was 961·65, and nutritive matter in 1000 parts, 64. Of mangel wurzel, in 36 roots the specific gravity was 1016·35, and the nutritive matter in 1000 parts 139. In the next table, Mr. Blundell showed that the nutritious ingredients in 1000 lb. of the respective roots, as follow, were—white turnip 42, swede 64, orange globe 135, and sugar beet 146.

Another table showed the comparison of large and small roots, its object being to find out whether wide planting and large roots materially diminished density. From this table it appeared that in four roots of green round turnips, the specific gravity (large) was 854, ditto (small) 920, being 66 in favour of small roots. Of three purple-topped Swedes, there were 11·6 in favour of small roots; of three green-topped, 36 in favour of large roots; of six Skirvings, 8 in favour of ditto; of twelve average 10·1 ditto. Of mangel wurzel, in three roots of long red, the difference was 21·7 in favour of large roots; in three red globes, 15·5 in favour of small roots; in three yellow globes, 7 ditto; in three sugar beets, 26·8 ditto; in six yellow globes, 14·8 ditto; in eighteen average, 8·5 ditto. The next table showed a comparison as to the probable effect of exposure on the upper as compared with the lower part of the same root, with reference to the question of earthing up for protection. The roots were cut in two at the line marked by the surface of the soil, and each part weighed. In turnips, three parts of green-round weighed gave a specific gravity in the upper half of 881, in the lower part, 921, being 40 in favour of the lower part. In mangel wurzel, in six parts of yellow globes, large, the difference was 13·6 in favour of the lower part;

in six of ditto, small, 14·7 ditto; in six of swedes, Skirving's large, 44·4 ditto; and in six ditto, small, 28 ditto. Mr. Blundell concluded by saying that, after going into these details he should feel himself amply rewarded for any trouble he might have taken, if he could thereby promote an improved system of turnip culture.

Mr. Warner, jun., proposed "The health of the chairman," amidst great cheering.

The chairman returned thanks. He had attended that market as long as any one there. His friend, Mr. J. W. Warner, had, by his support of that market, and in various ways, done more for agriculture than any other gentleman with whom he was acquainted. Their's was no inconsiderable meeting; he had dined at Chatsworth the other day, and was in the presence of the good Duke of Richmond, and surrounded by persons of great intelligence in agriculture, but he had not heard there such a practical speech as that delivered this day by his friend, Mr. Blundell. Now, he contended, that speeches intended for the improvement of others should be purely practical; all idle theory should be excluded. When they talked about weight of roots, and width in the rows, everybody present could understand it, and such was the instruction they required. None could have heard Mr. Blundell's excellent speech without being struck with the value of artificial manures to the agriculturist. No one was more prejudiced against them than he formerly was. When Mr. Foster first introduced bone-dust, he thought of him as of the orators of the cart at public fairs; but if he had neglected to use artificial manures, his farm would have gone out of cultivation altogether. He must say, that by Mr. Foster and Mr. Le Jeune introducing the new manures in their neighbourhood, the agriculture of that district had derived the greatest benefits; and for himself he would say, that the more he used artificial manure, the cheaper he could cultivate his farm. The chairman concluded by proposing "Mr. Le Jeune's health."

Mr. Le Jeune returned thanks. He had attended that market with more pleasure than any other, because there was a greater stimulus given to the progress of agriculture there than in any other market in the county of Hants. With respect to the variety of manures offered, some were good and some bad, and the experiments of practical men, such as Mr. Blundell, were, therefore, of the greatest benefit in guiding others in their choice. On that principle he would beg to read the letter of Mr. Pothecary, of Rockton Manor Farm, Fordingbridge, detailing experiments for the purpose of testing the relative merits of guano and bones.

"Dear Sir,—I have forwarded you the particulars of experiments I made with guano.

"No. 1. A piece of wheat was tried in a poor sand, gravelly loam soil. It was previously sown to tares, spring turnips, summer turnips, in succession, eaten off, spent on the same; and subsequently sown for wheat. Not wishing to protract my wheat sowing by waiting for my flock to dress that portion of the field where the turnips did not succeed, I resolved on procuring half a ton of guano, applying it at the rate of 2 cwt. per acre, incorporated with 20 bls. of ashes per acre. The land was ploughed, pressed, and dressed; the guano and ashes were drilled with the wheat. The drill went one turn without any manure, and the effects were visible at a great distance; the contrast was very superior to the eye in favour of guano, over that part of the field in which two more artificial crops had been spent. The produce of each system was weighed:—guano producing 5 sacks of wheat per acre, and 20 cwt. 3 qrs. and 16 lb. of straw—the artificial green-crop system gave 4 sacks and 2 bushels of wheat per acre, and 17 cwt. 2 qrs. and 20 lb. of straw per acre—showing 2 bls. of wheat and 3 cwt. and 24 lb. of straw in favour of guano.

"No. 2. The favourable appearance of the wheat induced me to test the virtues of guano *versus* bones. The soil was a light chalk. The ground was winter fallowed after wheat, cut across in the spring, and cleansed in the regular way for turnips. The exact value of bones and guano were mixed with 20 lb. of ashes and drilled per acre, side by side. The bones produced 8 tons 18 cwt. 3 qrs. and 5 lb. The guano, 8 tons 17 cwt. and 16 lb. per acre. The produce in favour of bones was 1 cwt. 2 qrs. and 16 lb. I must here observe, the bones had the advantage of the best land in the field, consequently the plants were more regular; yet the guano grew the largest turnips, and nearly the same weight per acre. From this circumstance I conclude, where you can obtain unsatisfactory plants, the guano will triumph over bones.

"No. 3. This field was treated like No. 2, the soil a poor sand, gravelly loam. Here the result differed, the fertilizing property of guano was decisive, and throughout its success was prominent and satisfactory, yielding 9 tons 4 cwt. 1 qr. 4 lb.; the bones 8 tons 5 cwt. 1 qr. 22 lb. The produce in favour of guano was 18 cwt. 3 qrs. 10 lb. My first proof with it having realized my most sanguine expectations, induced me this year to extra manure the larger portion of my wheat land with my yard and stable dung; reserving 10 acres to apply guano. It is satisfactory to state also, this wheat, like that of last year, has a better appearance than any that I have; and at three weeks old you could easily discover where the difference in the dressings commenced and terminated.—I remain, &c.,

"John Pothecary."

"Dec. 18, 1843."

Mr. Le Jeune said this letter fully corroborated the statement of his friend, Mr. Blundell, as to the greater distance being the best mode of cultivating the turnip. He had also several other experiments, which fully justified his stating guano to be one of the best fertilizers ever yet discovered, when properly applied.

AGRICULTURAL SUGGESTIONS.

By Mr. TOWERS, Member R. A. S. and H. Society of London.

In the letter which appeared in the last number of the British Farmer's Magazine, addressed to my respected friend Mr. Taylor, I brought up the retrospect of the year 1843 to the 1st of November, the latest complete period which was at my command.

Subsequent events have led me to infer that before I enter upon the immediate object of this paper, it will not be amiss to carry on the Retrospect, not only to the close of 1843, but also to the 31st of January, and this for two reasons: the article itself will include an entire course of the seasons; and again, by affording to readers in every part of the kingdom an opportunity to compare data and results, the real utility of meteorological tables may be determined and duly appreciated.

November commenced with rather improving but still changeable weather—cloudy, extremely damp, but with fine sunny gleams. Much rain fell in Berks on the third day. One frosty morning only (9th) occurred during the first twelve days. On the 13th the wind veered from south-east to north; the barometer rose to 30 inches, and continued at that height (called *fair*) for five days, with four frosty mornings, the lowest depression being on the 13th to 26° of Fahrenheit. When on the 17th the barometer declined to below 30°, the wind became westerly, and a period of steadfast gloom prevailed till the 27th, with very mild temperature! A little rain fell occasionally, and much on the very stormy night of the 23rd.

The average minimum *(night)* temperature of the month was.... 37·9°
„ „ maximum of all the days .... 44·6

On the 28th commenced that most singular altitude of the barometer, which, perhaps, for extent and persistency, has never been rivalled in these kingdoms. In the night of the 27th my glasses marked 29 in. 78 cts. Next morning at 8 o'clock, a. m., I noted 30 in. 8 cts.; and thence to December 30 the mercury never receded to 30 inches.

At the end of November every crop appeared in a promising condition; wheat sowing was not completed; several farmers having been taught by the adverse season of April to dread the consequences of early luxuriance. Some breadths were looking extremely well; and where ploughing proceeded, the ground begun to turn up well, the superfluous moisture occasioned by the rains of October having passed away. Turnips had improved much, and were well bulbed.

December is memorable in consequence of the phenomena now to be enumerated. Its first day showed the barometer at 30 in. 2 tenths, rising to 30·10; thermometer 40 minimum, 48 maximum, 37 at 10 p.m.: *wind* gentle from north; a cloudy atmosphere till night. The next morning was sunny. Sun also appeared on the 6th, 8th, 14th, 16th, 17th, and in the forenoon of the 24th. Christmas day was lovely throughout, after a morning haze had cleared away. With these exceptions all was cloud, gloom, or fog. A more quiet undisturbed month has rarely been witnessed; nor one—especially the 12th month of the year—wherein so little air was stirring, or so slight a degree of frost experienced. The barometer was always very high, the average of the whole being noted at 30·313 in.; that is, approaching to *set fair*, which mark the quicksilver attained (30·50) on Christmas eve. *Rain* fell on the 4th—little or none besides—and so far the atmospheric pressure was influential; yet the weather was hazy, and anything but fine. A hard winter was predicted; but throughout December the days and nights were almost equally warm; our averages being—minimum of all the days 40·6°, maximum in the shade nearly 47°.

On the 31st the mercury receded to 29 in. 70 cts., and the wind blew forcibly from south-west.

Agriculture may be thus described:—*Land* perfectly free from flood; the ground ploughing up as in a fine April. Turnips rich, full, and green. Young *wheat* rather remote, plant from plant, when compared with the close herbage of 1842, but abundantly more promising as respects security and future tillering. *Clover:* some good, but here and there patchy, evincing a poverty of soil, in so far as respects some peculiar inorganic material required by the nature of the plant—perhaps *gypsum.* Meadow grass green and healthy, showing the absence of frost, but nothing more. Animals of every kind prospering and healthy. Never did year close with higher general promise; nor ever were the complaints of the discontented more out of place and unjustifiable.

1844.

The change of weather indicated on the 31st ult. was, for a short time, realized. January came in cool, with *sleet,* after wind and rain throughout the preceding night. The second day was fine, with 2 degrees of actual frost at sunrise, and 8 degrees (24° of the instrument) at 10 o'clock, p.m. Strange to say, on the morning of the 3rd my thermometer marked 9° Fahrenheit—i. e., 24 degrees of actual frost. In no other quarter could so caustic a visitation be traced; the tables quoting 17°, 14°, 13°. Yet many garden vegetables suffered. There were in the east of Berks fully 6 inches of snow on the surface, which effectually protected the warm ground; so much so, that in no place did it appear that the covered surface was at all hardened. This intense severity killed half the broccoli, and effected the work of a sharp winter in three hours. Yet so transitory did it prove, that before noon the thermometer rose 26 degrees; and thence, till the 10th morning, frost was entirely absent. On the 15th and 16th the weather was keen; and, finally, on the 25th there was 1 degree. With these few exceptions January passed with very mild and open weather. The average of all the nights was quite 34½°; that of the days 43°.

Westerly winds prevailed, tending toward the north during fifteen of the days; to the east, only five. The month closed with strong north-west wind and driving scuds of snow, the precursor of the only confirmed winter weather of the season. But this we shall again recur to at the close of the present article.

January was a cheerful month, with very many alternating sunny gleams; it was altogether benign to vegetation, the wheat, turnips, clover, and meadows, all maintaining their character. Lambing, so far as observed in the locality, has been extremely favourable, and therefore we may be justified in the opinion that this year is one of great promise. One circumstance it is an imperious duty to impress. Never did we pass a season so mild in which the young wheat appeared so little excited; it remained as in December, green, healthy, compact, but not crowded, and with no hint of that pride of luxuriance which predicted the check of 1843. The papers at a remote distance have stated that in Berks the wheat is like a rich green meadow, so luxuriant that farmers have been obliged to feed it off. A more gratuitous false statement was never published to deceive the credulous. England's best instructor is a rare propagator of *truth!*

The *subjects* which now claim our more immediate notice may be rendered of vast importance if brought to the test of conclusive experiment, but this they can never be unless the trials are numerous, conducted in a liberal spirit, and by those only who are competent to form a correct judgment of results.

In looking over the last published number of the *Quarterly Journal of Agriculture*, among the *Transactions* of the Highland Society, at page 155, there is a paper

"*On the Effects of Soaking Seeds in Chemical Solutions*," which, judging from the leading paragraph, produced a very powerful impression. It will be needful to extract several entire passages, in order to do the writer justice, to some of which will be added a few, I hope, appropriate remarks. We read, first,

"There was, perhaps, no object in the exhibition of plants in the society's show at Dundee in August, 1843, which attracted such general attention as the remarkably strong and vigorous oats growing in soil, exhibited by Mr. James Campbell, of the Educational Seminaries of that town. The soil in which they grew possessed no peculiar property, except that *it had not been manured for eleven years.*"

By the words "growing in soil," we might have been led to understand that the plants were not *gathered* for exhibition; but it appears by a subsequent advertisement, that they were *taken up* as they grew, roots and soil adhering.

"Mr. Campbell, it is added, has, since the show, in the most liberal and disinterested manner, placed the particulars of his process in the hands of the society for the benefit of agriculturists generally; and to further his good intentions, the society has thought it proper to publish his own explanation of the method of conducting the process of preparing the seed, as it is given in letters, addressed at various times to the secretary."

This is a sanction to all intents and purposes; and, therefore, we have the authority of at least one most influential body to justify our attention. Yet candour demands that we include among the parties (agriculturists) to be benefited the worthy experimenter himself; since he "now begs to intimate that he is prepared to supply agriculturists with his *corn-growing liquids* at the following prices—viz., for *wheat*

2s. 6d .per gallon, barley 2s., grasses and oats 1s. 6d." This is fair enough; for the labourer is worthy, &c. It is "the same thing, only with a difference."

The exhibitor commences with a history of his progress towards the discovery, as a proprietor of 140 acres. He then alludes to the nostrums puffed off as manures; remarking that "no manure or other application of much permanency of effect, or approaching to anything like universal aptitude to soil, has yet been produced; and in all circumstances the expense of manures is still very great."

If by any fortunate discovery we could farm without manure, some serious economy might be exercised; but we question the expense of manure, were farmers to save *all* their refuse and decomposable products. They now buy preparations of *night-soil,* and pay for the labour and profit! Why not prepare it for themselves? Why not disinfect it, and fix its ammonia with a little diluted *sulphuric* (not muriatic) acid? What farmer is there in the three kingdoms who does not of necessity produce some *yard-dung,* which, therefore, can be added to land for the mere cost of labour? It would be a benefit to the country were any patriotic man, or institution, to print, and cause to be distributed, the late Mr. Rham's article on *Flemish Husbandry.* Should no other good result, the farmer who squanders the offal of his establishment, whether it be liquid or solid, vegetable or animal, would, at the least, be made to blush for his contempt of precept and example! It, however, is very questionable, whether a good deal of mischief be not occasioned by the incautious and redundant application of manures in general. To proceed—

"If the ultimate principles of which the proximate constituents of most of the gramineous seeds are composed could, by any possibility, be made so to enter the substance of the seed, and at the same time not to injure its vitality, as thoroughly to embue its texture with an excess of these principles, the end would be accomplished; and it is by doing this, to a certain extent, that I am convinced I have succeeded."

In examining the first principles thus laid down by Mr. Campbell as the ground-work of his attempt, it is needful to enquire what he means by the terms, the *ultimate* principles of *proximate* constituents. Grain of oats, barley, and wheat, are by chemical analysis announced to be resolvable into carbon, oxygen, hydrogen, and nitrogen—i. e., the ultimate elements of woody fibre, of water, and of atmospheric air. The *proximate* elements of seed—such as the flour, gluten, starch: all these are resolvable into the same final results, or ultimate elements, beyond which analysis cannot go. Now, if by any preparation a tendency to that electric condition of vital interchange of the elements which *constitutes germination* and development, *could be induced;* and if Mr. Campbell have attained a knowledge of such preparation and its effects, he has established his principles, and done the cause of agricultural chemistry great service. We shall see when we come to the agents employed. In the meantime, by his advertisement it will be found that he is no vain pretender; for in one paragraph he observes—

"After impregnation with these liquids *the seed possessed within itself* elements which not only afford additional nourishment to the grain during the progress of germination, but *communicate* to the expanding vessels of the plant an *aptitude to absorb food,* both from the soil and the atmosphere." Again, as to the earth—

"The soil in which my seeds were sown has had no manure of any kind, to my certain knowledge, for the last *eleven* years. I have corn in the *natural state,* as well as others that have undergone the process, so that a comparison of the results can easily be instituted."

It will be useless to follow the article in its introductory detail: the following extracts, therefore, will refer to the process and its results.

"I steeped the seeds of the various specimens exhibited in sulphate, nitrate, and muriate of ammonia, in nitrate of soda and potass, and in combinations of these; and in all cases the results were highly favourable. For example, seeds of *wheat* steeped in sulphate of ammonia on the 5th of July, had by the 10th of August, the last day of the show, tillered into *nine, ten,* and *eleven* stems, of nearly equal vigour; while seeds of the same sample, *unprepared,* and sown at the same time, in the same soil, had not tillered into more than *two, three,* and *four* stems."

The only suspicion we would cast upon this clearly stated experiment attaches to the period of sowing and of growth. July is the middle of summer, and five weeks of growth prove little. No comparison can be instituted between a course so short, during the full power of the sun, and of ground heated like a hot-bed, and that of nine months between November and August, when the seed undergoes all the transitions attendant upon three entire seasons. The experiment, therefore, does not quite apply to common husbandry.

As to the elements of the steeps. *Sulphate of ammonia* consists proximately of *sulphuric acid* and the volatile alkali called *ammonia,* united in the form of a neutral salt. Its ultimate elements are *sulphur* and *oxygen* in the acid, *hydrogen* and *nitrogen* in the ammonia. All of these, if developed by the vital agency of germination, are compatible with the elements of the seed. *Nitrate of ammonia* substitutes the nitric acid for the sulphuric, and the elements of the acid are *nitrogen* and *oxygen*. The *nitrates of potassa and soda* substitute *potash*, that is, an *oxide of potassium*, and *soda*, an oxide of *sodium*, for ammonia. Of these nitrates much has been written. The former is common saltpetre, and the latter is cubic nitre, now extensively employed in agriculture. As to the mixtures or combinations of any or all, seeing the results are stated "favourable," they only tend to complicate the process, and render it indefinite. It is like the old medicaments of the apothecary, which, by combining twenty various drugs and chemicals, some incompatible, involved the results in confusion. Fortunately Mr. Campbell comes back to a few more simple data. Thus—

"I prepared the various mixtures from the above specified salts exactly neutralized, and then added from 8 to 12 measures of water. The time of steeping varied from 50 to 94 hours, at a temperature of about 60° Fahrenheit. I found, however, that barley does not succeed so well if steeped beyond 60 hours. Rye-grass and other gramineous seeds do with steeping from 16 to 20 hours, and clover from 8 to 10, but not more, for being bilobate, they are apt to swell too much, and burst."

By the term "*neutralized,*" I must understand "*saturated,*" otherwise the proportions of the chemical solution and water are not definite. All the salts named above are now purchasable at quoted prices regularly advertised: so much in proof of the extension of scientific research and enquiry! But if any one choose to prepare for himself a small quantity of the steep, which, by Mr. Campbell's own showing, has been found very, if not the most effectual—*(sulphate of ammonia)*—he may do it thus:—Take one ounce of the smelling-salt of the shops (called *carbonate of ammonia)*, break it up into coarse powder, place it in a large tea-cup, or rather an earthen or glass vessel with a lip, and pour gradually on it so much hot rain-water as will just dissolve the salt, stirring with a strip of glass on each addition. When dissolved and cold, drop in diluted sulphuric acid, (one part of concentrated oil of vitriol added gradually to 8 parts of water,) stirring carefully till effervescence cease. This may safely be considered a *saturated* solution of sulphate of ammonia, so much so, at least, as to be taken as a standard of operation, to which the proportion of water directed by Mr. Campbell is to be added.

Whatever salt be used, if purchased dry, can readily be dissolved to saturation by adding small portions gradually to any given weight of cold water, till no more will be taken up.

"The very superior specimens of tall oats, averaging 160 grains on each stem, and 8 available stems from each seed, were prepared from *sulphate of ammonia.*"

If this return be obtained from land without manure, the result ought to be more favourable if a due proportion of that be added; and this, in fact, Mr. Campbell believes will always be the case; for he says—"I am quite satisfied that even without the application of common manures double crops at least may be thus raised, and, under the application of ordinary manure, crops *ten-fold* greater than usual."

The principle claimed by Mr. Campbell, as I have shown, is the imbuing of seed with some appropriate elements which are compatible with its own elements, not thereby rejecting manure, but the contrary, thus promoting the due laboration and absorption of the nutritive products. The experiments are so simple that a farmer with a rod of spare land is to blame who rejects them as unworthy of a trial. Even the gardener would do well to steep a few seeds of slow germination, instead of employing scalding water, which I have known to destroy vitality altogether.

Another consideration will be the medicating of the seeds. Already farmers employ *sulphate of copper* (blue vitriol) to destroy the *smut fungus;* not reflecting that the remedy is entirely destructive if the steep be strong. Now the neutral salts named by Mr. Campbell are all quite congenial with the elements of the cereal tribes; hence, if employed with discretion, they not only may stimulate and sustain the seed in its early developments, but also preserve it from predatory insects.

The *protection* of seed is a consideration of no little importance, because it includes economy. A vast deal is squandered, and Mr. Morton has shown that wheat plants standing in close contact cannot duly progress. He has even pointed out the proper relative spaces required to admit of ample fertility, and the results of properly managed dibbling have substantiated the facts. Mr. Campbell also, in his prospectus "*To agriculturists,*" observes that "One-third, or even one-half less grain is required for seed than is commonly used." If, then, the *steeps*, while innocuous in themselves when duly diluted (to say nothing of fertilization), tend to preserve the seed sown, we find an additional reason to urge the necessity of bringing them extensively to the test of experiments.

I close this article by recurring to the weather. *February* has hitherto been the winter of the season. Every day heretofore has proved frosty. Snow has fallen in abundance without wind; therefore we may reckon that on the 2nd and 4th days the total has not been less than 10 or 12 inches, without drift. A powerful sun and a progressive day temperature removed it gradually; but it lay on the surface so long, and was absorbed so continuously, that it must have produced all the beneficial effects that can attend this meteor. It is not improbable that much carbon and ammonia are conveyed to the ground through the medium of liquefying snow.

The lowest temperature here was in the morning of the 6th—18° Fahrenheit; on the 13th 24°; the average of 13 nights about 27°, that is, 5 degrees of frost. Of course growth is arrested, and now sufficiently checked. There have been six beautiful sunny days, four of cloud and gloom, and the 12th and 13th were cold, with haze, the most chilly and ungenial of the winter.

Since writing the last lines, I have met and conversed with a gentleman who farms 400 acres. He is a medical man, but, being accustomed to, and delighting in agriculture, possesses all that expansion of mind which permits him to seize every improvement without blind credulity, while he remains unfettered by the prejudices of routine. He told me that he considered the existing weather as most promising; and he firmly believed that, take the winter throughout, it had been altogether propitious, and, therefore, that there was as yet every prospect of an abundant and prosperous harvest.

PROTECTION TO BRITISH AGRICULTURE.

"Nothing can compensate a People for being dependent on other Nations for the Bread they eat."—*Van Buren's Mess. to Con.*

The agriculturists of Britain at length see the necessity of making due efforts to protect their interests. The baneful effects of the untiring labours of the emissaries of the League have been developed to an extent which has caused alarm; the warnings which were so frequently given and so heedlessly received have now been painfully realized; and, though late, the agricultural interest perceives its true position. Meetings have taken place in many counties, the general results of which are subscriptions to counteract the designs of the League, and petitions to Parliament.

So far this is well enough, but although the money be subscribed, the *work* will have to be done. The idle boast of the League, that it would accomplish its object if funds could be raised—about which it seemed more confident than the issue proves—has had a different effect to that which was sought; and, in place of intimidating the agriculturists, has roused them to make a vigorous and, doubtless, a successful defence; for if (as is asserted) the issue depend upon the funds that can be raised, the Leaguers have not the remotest chance. But to combat the mischief which that League has already engendered will require energies which must not slacken; as probably not a hamlet or village can be found in England which has not been invaded by the pernicious influence of that notoriously self-interested combination. Essays on the Corn-laws, written in conformity with the views of the proposers, and tracts in a similar strain, have been issued in countless thousands, and circulated with a persevering industry which would do credit to a better cause; while hireling orators, of questionable character, have lectured according to the instructions they received from their employers.

Now the gross annual value of agricultural produce is stated to be £300,000,000, that of manufactures only £173,000,000; it is rather reversing the order of things, then, to make agriculture secondary to manufactures. But when men can make such quick and profitable returns of capital as manufacturers so frequently do, in many cases their rapacity knows no bounds: they neither think, nor feel, nor care for others; and if they will grind down to the uttermost point of starvation the few work-people they require beyond their steam power, how can it be expected they shall spare any other class? Their paid agents have pried into the homes of the farm-labourers, and, when they could, have made the worst of the knowledge so acquired. These things have been published to the world, and the foulest epithets have been profusely lavished on the agriculturists; but it is now the turn of the latter to retort. Let them send forth a legion of honest men to the abodes of the factory slaves, and they will furnish matter to astonish, horrify, and disgust the public. Let them hear, too, what Mr. Fielden (member for Oldham, also a manufacturer, be it observed,) says of the doings of the factory lords, in respect to the children in their employ:—

"The small and nimble fingers of little children being by very far the most in request, the custom instantly sprang up of procuring apprentices from the different parish workhouses of London, Birmingham, and elsewhere. *Many thousands of these little hapless creatures from seven to thirteen* or fourteen years old, *were sent down into the north.* The custom was, for the master to clothe his apprentices, and to feed and lodge them in an 'apprentice house,' near the factory. Overseers were appointed to see to the works, *whose interest it was to work the children to the utmost, because their pay was in proportion to the quantity of work that they could exact. Cruelty was of course the consequence;* and there is abundant evidence on record, and preserved in the recollections of some who still live, to show, that in many of the manufacturing districts, but particularly, I am afraid, in the guilty county to which I belong, *cruelties the most heart-rending were practised upon the unoffending and friendless creatures who were thus consigned to the charge of master manufacturers;* that they were harassed to the brink of death by *excess of labour;* that they were *flogged, fettered, and tortured* in the most exquisite refinement of cruelty; that they were, in many cases, *starved to the bone, while flogged to their work!* and that even, in some instances, they *were driven to commit suicide,* to evade the cruelties of a world in which, though born to it so recently, their happiest moments had been passed in the garb and coercion of a workhouse! AND YET THE PROFITS OF MANUFACTURERS WERE ENORMOUS; *but this only whetted the appetite that* IT SHOULD HAVE SATISFIED."

In the face of such statements, how can the Leaguers pretend to sympathise with the poor working man, and imagine that their hypocrisy escapes his notice? Or with what propriety can they taunt the farmer on the condition of his labourers, when his profits are so small in comparison to those of the manufacturer, and when other extenuating circumstances should also be taken into consideration? No; the operatives of Britain have long proved the insincerity of the promises of the Leaguers, and are decidedly hostile to their proceedings. The cry of *cheap* bread has no charm for workmen, if their earnings are to be proportionally diminished; and they look with the utmost distrust on a combination of men, who, not satisfied with superseding labour by steam machinery, would now sink the British to a level with the foreign artisan. But the contributions to the wonder-working fund languish; and the declaration of ministers not to meddle with the Corn-law, together with the resolutions and subscriptions of the protective societies, prove that the Leaguers are not yet likely to attain the object of their ambition.

It must rather take that part of the public by surprise, who, ignorant souls, knowing no better, and implicitly believing the lies of the League, that the agriculturists were a loutish set, and incapable of expressing their opinions on any subject, to read the speeches delivered at the various protective meetings; and it is highly creditable to, and in exact conformity with, the character of the agriculturists, that the proceedings of those societies are invariably of a peaceful nature; no physical force demonstrations; no violent appeals to the passions of the audience; but facts and views stated in a calm and rational manner. We could make many selections to justify this assertion; one, however, must suffice, from the temperate and sensible speech of Lord Worsley at the last annual meeting of the Great Grimsby Agricultural Society. His lordship observes, "I have learned that Col. Sibthorp has sent £50, and that Mr. Chaplin and Mr. Christopher have each sent £20 towards the objects contemplated in the resolutions. Now I do not think this very wise. Such sums are greater than the common expenses of the society require, but are quite inadequate in the way of counteracting the subscriptions raised throughout the country—the £100,000 of the League. Whether the new League fund is to be expended in electioneering I know not, but, for my own part, I am not frightened at their £100,000. If it be spent in electioneering purposes, it cannot be expended in a very constitutional or proper manner, because it can only be spent in bringing voters over to vote for candidates of the League. My own opinion is, that the League will not attempt to spend their £100,000 except in those places where a strong feeling already exists in their favour; and we must not conceal from ourselves, that in many places such a feeling to a considerable extent exists. But in the agricultural districts I do not imagine they will meet with much success. In this county I can venture to say there has been no change of opinion among the farmers upon the Corn-laws. Wherever I go, whether among the landowners or among the tillers of the soil, I find but one opinion as to the duty and necessity of protecting agriculture; I find a unanimous expression of opinion, that the degree of protection now afforded by the legislature is not so large as we could wish, or as we could fairly expect, and that it is quite unnecessary to withdraw it from us. The protection the farmer at present enjoys is not adequate upon wheat, and is decidedly inadequate upon oats. Gentlemen, we hear from the League that this is a landlord's question, and not a tenant's question. Now if this mode of reasoning will hold good in agriculture, it will also equally apply to manufactures. And if we grant for the sake of argument that it is correct, it would equally apply to the producers of manufactured goods. What would the tradesmen present think if they were told—although you have to sell the manufacturer's goods in the home market, you are not interested in them like those who produce them. I, as a landlord, feel as much interested in the maintenance of the corn-laws as you. It is too much kept out of sight that it is not the value of the present crop which gives the tenant farmer an interest in the corn-laws, but the money spent in producing that crop. If people will go over the county, and see the high state of cultivation into which it has been brought, they must be convinced that this has not been done without the expenditure of a great deal of money, and that money belonging to the farmer. If he be deprived of his land, he will tell you that he has spent his hundreds or his thousands upon it, in the hope of making more money thereby. I certainly think the tenant farmer is very much interested in the corn-laws. I think it can also be proved that the agricultural labourer is equally interested in them. Although it is only two years since an alteration was made in the laws affecting the agricultural interest, yet we know that the same number of persons are not employed on the land as before, and that there are a great number of labourers out of employment from this cause. The reason of this is very obvious. The farmer finds that he cannot make the same return on his capital as heretofore, and he is compelled to reduce his expenses. I am sorry that the labourer should be thrown out of employment; but the reflection that occurs is, if the small change made already in the laws affecting the agricultural interest have produced so much distress, what would the greater change of a total repeal of the Corn-laws produce? I have long since stated my opinions upon these subjects, and I have seen no reason to change my views. I know there are a great number of persons in the county who do not go so far as I do, and who think that a moderate fixed duty would be desirable. I have given great attention to the subject, and I cannot agree with them. I am quite of opinion that, except to the speculative corn merchant, the sliding scale is the best system of corn-laws we can have."

His lordship very properly dwells on the electioneering tactics of the Leaguers, as they have boasted of the influence they would exercise at every election. They however fail in all cases to realise these boasts: they made themselves sure of Salisbury and other places, but they were weighed and found wanting; and it will rest with the agriculturists whether they shall not always be found so. But the utmost vigilance must be exercised, and whether they attempt to coerce or bribe electors, their intention must be frustrated. Facts must be printed and extensively circulated in opposition to the notoriously partial fabrications of the Leaguers; who must be met in every quarter by that stern defiance which they have so wantonly provoked. Jefferson, in speaking of an agricultural community observes, "Those who labour in the earth are the chosen people of God, if ever he had a chosen people, whose breasts he made his pecular deposit for substantial and genuine virtue. It is the focus in which he keeps alive that sacred fire which might otherwise escape from the face of the earth. *Corruption of morals in the mass of cultivators is a phenomenon of which no age or nation has furnished an example.*" A union, therefore, of such people need not fear any combination. The League might, braggart-like, vaunt in the absence of difficulty or resistance; but, after a few encounters with the influence of the protective societies, its tone will be humbled; it will find itself out of place in the rural districts; and powerless and unpopular, it will slink to the smoky locale which generated it, and dissolve beneath the withering scorn of the multitudes it sought to delude. Z.

February 25, 1844.

FARMING IN THE OLDEN TIME:

A Review of "The Five Hundred Points of Good Husbandry, by Thomas Tusser, Gentleman;"

COMPARED & CONTRASTED WITH THE SYSTEM OF THE PRESENT DAY.

BY SAMUEL TAYLOR.

I often think it is a pursuit not only interesting, but profitable, to explore the practice of the farmers of "the olden time," with a view to ascertain by comparison with that of the present day, to what degree of merit our forefathers were entitled, and how far our modern improvements may, or may not be founded on their experience. In so doing, I would, as Hudibras quaintly hath it,

> "Make former times shake hands with latter;"

And if in these researches, I find but faint traces of that wondrous spirit of mechanical invention for which the present age is so highly distinguished, and which has transformed our fields into gardens, I do not hesitate to own, that I often rise from the enquiry with feelings of admiration at the wisdom, sound sense, and not unfrequently, the intimate acquaintance possessed by some of our oldest writers with all the leading particulars of farm management, and rural affairs in general. Anthony Fitzherbert's "Boke of Husbandrie," first published in 1532, as the earliest, is likewise one of the most striking illustrations of this my meaning; and, however quaint and uncouth its style, cannot be read, even in these enlightened days, without entertainment, and even edification.

The concluding passages to this curious old book will be interesting to general readers; and, as such, I make no apology for inserting them here.

"Be it knowen to al men spirituall and temporal, that I make protestacion before god and man that I entende not to write any thing that is or may be contrary to the fayth of christe and al holy churche. But I am ready to revoke my saying if any thyng have passed my mouth for want of learnyng. And to submitte myselfe to correccion, and my boke to reformacyon. And as touchyng the poyntes of husbandrye, and of other articles conteyned in thys present boke, I will not say that it is the best way, and will serve best *in* all places, but I saye it is the best waye that ever I coulde prove by experyence, the whiche have been a housholder thys XL yeres and more. And I have assaied many and divers waies, and done my diligence to prove by experyence which should be the best waye."

But leaving Fitzherbert, I proceed to offer a brief analysis of the life and writings of one of his contemporaries, Old Tusser; a person of remarkable versatility of talent; having been not less celebrated for his musical and poetical, than for his agricultural acquirements. These latter, combined with the former, have, with some, obtained for him the title of "the British Varro," and certainly, when we consider the circumstances under which he wrote his "Five Hundred Points of Good Husbandry," it does appear by no means an inappropriate designation. It is a very extraordinary book.

I am aware that to many, the bare idea of a farmer's calendar in *verse* is somewhat bordering on the ludicrous, and the perusal thereof a waste of time, meriting the infliction of a censure similar to that promulgated by old Tony Weller, on hearing his son's valentine read.

"I *could* end with a werse," said the son, "what do you think?"

"I do'nt like it, Sammy," rejoined Mr. Weller, "poetry's unnat'ral: no man ever talked in poetry, 'cept a beadle on a boxing day, or Warren's blacking, or Rowland's oil, or some of them low fellows. Never you let yourself down to talk poetry, my boy."

With all due respect to this high and grave authority, I will e'en venture on the prosecution of my design, and at once introduce the reader to my rhyming friend Tusser, of whose history the following is a brief, and necessarily a very imperfect sketch.

Thomas Tusser was born about 1515, at Rivenhall, near Witham, in Essex. His father appears to have intended him to follow the profession of a singer; for in early youth he was placed as a chorister in the collegiate chapel of Wallingford, and having a fine voice, was pressed, according to the despotic usage of those days, for the service of one of the choirs, where it appears he was miserable enough; the conduct of those in authority over the poor singers being pretty much of a piece with the mode by which the latter were kidnapped into the service. By degrees, however, he was fortunate enough to obtain a situation in the choir of St. Paul's; where, under the care and tuition of John Redford, the then organist, of whom he makes honourable and grateful mention, he continued for a while in comparative ease and comfort.

From hence, in due time, he was transferred to Eton School, to acquire a knowledge of Latin; but was treated by the master, Nicholas Udall, with great, and, if he is correct in stating "For fault but small, or none at all," certainly with unnecessary, severity.

He subsequently removed to Cambridge—a transition, as he expresses it, from hell to heaven; for he dwells with considerable warmth of feeling on the pleasure he experienced during his sojourn in the Hall of Trinity, with the exception of a long and severe illness he there experienced, and which ultimately induced him, by the advice and influence of his friend and patron William Lord Paget, of whom he speaks in the most grateful terms, to accept of some appointment, perhaps in his professional character, about the court. Here he remained some ten years; but getting weary and disgusted with the vices he there witnessed, he all at once formed the singular resolution to turn farmer, which he carried into effect, by engaging a farm at Cattiwade or Catawade, a hamlet of the Parish of Brantham, in Suffolk, upon the borders of Essex.

And here one is naturally tempted to ask—What, in the whole course of his life and previous pursuits, could have induced him to adopt this singular resolve? Of agriculture he could know nothing. His professional avocations must have been a complete bar to the acquisition of even a smattering of rural affairs; added to which, he was no longer young; probably at least thirty-four when he entered on his farm. Yet, under all these disadvantages, did he enter upon his new vocation; and with such heart and assiduity, as to excite the wonder and admiration even of modern practitioners, at the proficiency he attained, not only in the leading principles, but all the minutiæ of farm management, from the plough to the simplest tool about the place.

Provincialisms of the broadest kind pervade every page of his writings, and furnish abundant internal evidence of their Norfolk and Suffolk origin. For this facility of acquiring, what may be justly styled, the vulgar tongue, he was probably much indebted to his excellent musical ear. But to return.

He seems to have continued at Catawade about eight years, at the end of which period, probably in 1557, he published the first edition of his "Five Hundred Points of Good Husbandrie," being then perhaps forty-two years of age. Not long after this, he left Catawade, on account of his wife's ill health, and took up his abode at Ipswich, from whence he shortly afterwards resumed his labours as an husbandman at West Dereham, a village between Downham and Stoke Ferry; but his residence here appears to have been abridged by certain unneighbourly feuds, of which he thus complains:

"For when I spy'd
That Lord with Lord could not accord,
But now pound he, and now pound we,
Then left I all, because such brawl
I list not bide."

His roving unsettled habits induced him once more to exchange town for country; and we next find him a temporary sojourner at Norwich, where he cultivated the acquaintance of Sir Richard Southwell, and of "Master Salisbury Dean of Norwich," from both of whom he received many marks of kindness, of the value of which he was fully sensible.

After a short abode in this city, probably in connection with the choir of the cathedral, he once more turned his attention to farming pursuits, and hired the tithes of the parish of Fairstead, near Witham; but "the daily pays, the miry ways," and endless broils in which this occupation involved him, were but ill suited either to his health or disposition, and he was soon glad to resign it, and once more try his fortune in London, where he ultimately closed his chequered career, it is to be feared in but indigent circumstances, in or about the year 1580, and was interred in St. Mildred's Church, in the Poultry.

Such are the leading features in the life of Thomas Tusser, for which I am mainly indebted to Dr. Mavor's edition of his "Five Hundred Points," whose notes in illustration of many of the glossarial and local terms, form a valuable addition to the contents of this curious and interesting volume. Here and there indeed the good Dr. is a little at fault from his inexperience in the genuine Norfolk dialect. One or two instances will suffice to show this:—Tusser, amongst other "husbandly furniture," recommends a pannel and ped—on which the Dr. observes, "Between a *pannel* and *ped*, or pad, the difference is, the one is shorter than the other, and raised before and behind for small burdens, while the other is adapted for large."—P. 11. Now, with all due deference, a ped is a very different thing from what is here described; as any one can testify who has ever attended Norwich Provision Market. "It is," says Forby, in his Vocabulary of East Anglia, "a large wicker basket, with a lid. Two are commonly used, and called 'a pair of peds,' one on each side of a horse, in which pork, fowls, butter, and eggs, are carried to market." "Tusser," he observes, "could not have confounded the *ped* with a *pad*, which must be placed on the horse's back to prevent its being galled and excoriated by the strong leathern strops which hold the two *peds* together." The necessity of their being used in pairs is obvious, in order to preserve the proper balance of the load.

Again, Tusser exhorts the farmer to

> "Save wing for a thresher, when gander doth die;"

On which his annotator has the following note:—

"'A thresher,' spelt *thressher* in the edition of 1573, is evidently in this place taken for a *duster* of furniture, for which purpose the wing of a goose is still in use."—P. 264.

The real meaning is this; as any Norfolk *tasker* or *thresher* can verify:—Every barn is provided with a *fan*, a broad, flat, shallow sort of basket, of wicker-work, of a fan shape, as its name implies. It is used to *fye*, or clean up, small parcels of grain, principally wheat; from one to two pecks of which are put into the fan, and the chaff and dust separated by alternately throwing up the contents by a peculiar jerk of the wrists, and then by a lateral motion the *koshes*, or *chobs* (unhusked grains), rise to the surface, from whence they are swept off with a *wing*. The modern improved winnowing machines have in a great measure superseded the use of this simple apparatus; which, however, is still found in many barns, but principally for removing chaff and colder; its form being well adapted for this purpose. Dr. Mavor seems to have overlooked a previous note of his to the first stanza of "A digression to Husbandly Furniture," wherein he himself has assigned to the fan and wing their legitimate uses.

"1. Barn-locked, gofe-ladder, short pitchfork and long,
Flail, straw-fork, and rake, with a *fan* that is strong:
Wing, cart-nave and bushel, peck, strike ready hand,
Get casting sholve, broom, and a sack with a band."—P. 9.
(Barn Furniture.)

"The *straw-fork* and *rake* were to turn the straw from off the threshed corn; and the *fan* and *wing* to *clean* it."—Editor's Note.

And here I may remark, that, as a main object with me will be to connect the practice of husbandry recommended by Tusser, with that still in use in Norfolk and Suffolk, I propose to explain as I proceed, such phrases and terms as are to this day matters of common parlance in the district of East Anglia.

A *gofe* or *goaf*, means any quantity of corn in the straw laid into one end of a barn. It may be of wheat, or of any other grain; but if of barley, oats, or other swathe corn, it is frequently *horse-trodden;* and the operation is called *riding the goaf.* It is no uncommon thing to hear a master thus address a boy—"Come huther baw. You must ride the *gofe* this morning."

A *gofe-ladder* is merely a short ladder for those employed in *goafing* to get up and down by.

A *casting sholve*, or *shulve*, is a broad shovel, used then as now, for throwing the undressed corn from one side of the barn to the other. By this process the chaff falls almost as soon as it quits the shovel; the *koshes* next, at the bottom, or tail of the heap, from whence they are usually swept by one of the taskers (there being generally two in the barn) who, guarded by a sack over his head and shoulders, and armed with a long pliable birch broom, keeps constantly sweeping while his partner is *casting*. This system can only be depended upon where there are no weeds nor rubbish of equal specific gravity with the wheat. These weeds, it is obvious, will fly as far as the best grain, and therefore cannot be got out by *casting*. The sweepings are dressed by the *fan* and *wing*, as already mentioned; and the heap, after casting and sweeping, is generally *skreened*, which takes out all the poppies, charlocks, &c., that have been heavy enough to fly as far as the wheat heap, yet are too small to pass the wires of the skreen, but drop through them.

"7. Ten sacks, whereof every one holdeth a coom."

The term *coom*, or *coomb*, is especially Norfolk and Suffolk. It signifies four bushels, or half a quarter. Twenty coombs are called a *last*. "Did you buy much barley to-day?" "No! not above twenty last" (200 quarters).

In seed time we are thus cautioned to keep off crows and other vermin—

"14. No sooner a sowing, but out by and bye,
With mawther or boy, that alarum can cry;
And let them be armed with sling or with bow,
To scare away pigeon, the rook and the crow."

Dr. Mavor has it "with *mother* or boy;" a lamentable perversion of the genuine Norfolk. No Norfolk man could mistake *mother* for *mawther*. Look at the elegant abbreviation—"Co, maw, do'nt you be a fule." Or applied to a third person—"The maw 'Riar, she told me so and so;" meaning, It was the girl Maria told me, &c.

> "15. Seed sown, draw a furrow the water to drain,
> And dyke up such ends, as in harm do remain:
> For driving of cattle, or roving that way,
> Which, being prevented, ye hinder their prey."

An admirable practice, that of water furrowing; and as applicable in 1844 as in 1557. In fact, whether under fallow, or cropped with corn, water has no business on the surface. Crop or no crop, nothing is worse than for land to be *water-slain*.

The *ringling* of hogs, as it is called to this day in Norfolk, was a practice well known in Tusser's time.

> "29. From rooting of pasture, ring hog ye had need,
> Which being well ringled, the better do feed.
> Though young with their elders will lightly keep best,
> Yet spare not to ringle both great and the rest."—P. 22.

Many good practical directions are given for preparing the land and sowing the wheat crop; but Master Tusser was not an *afternoon* farmer. He was for taking time by the forelock, and was undoubtedly a friend to early sowing.

> "3. If weather will suffer, this counsel I give,
> Leave sowing of wheat before Hallowmas eve."—P. 31.

Meaning before October 31st. Now, as to the precise time of finishing wheat-sowing, with all due deference to our old friend Tusser, that is a matter which must entirely depend on the nature of the soil; for what may be very early for warm gravelly lands may be very late for cold clays. Wheat sown on the former in the middle of November may come to harvest as soon as that sown on the latter a month earlier. In fact, no greater blunder can be committed than to sow light land too early. It becomes *winter-proud;* its vegetative powers are exhausted in the production of straw; and the crop is comparatively an abortion. Much, of course, must depend on the season; but I have known wheat do well, sown even so late as February. I do not mean *spring*, but *winter* wheat; they being two distinct varieties—the *Triticum æstivum* and *Triticum hybernum.*

"30. Where water all winter annoyeth too much,
Bestow not thy wheat upon land that is such;
But rather sow oats, or else bullimong there,
Grey peason, or runcivals, fitches, or tare."—P. 38.

Another hint as to the necessity of laying land dry, whether destined for wheat or any other crop.

The *bullimong* here mentioned is a mixture of oats, peas, and vetches, and is thus alluded to in a settlement of accounts between the Rev. John Meadows and one of his tenants, Michaelmas, 1661:

"Shorter's hay and corne this yeare was all paid in kinde. All that he ought me before was six pounds, of which I have received three combe, two bushels, and one pecke of bullimung, and all the hay that now lies in the old barne."—"*The Suffolk Bartholomeans,*" by the late Edgar Taylor, F.S.A., p. 39.

Of *runcival*, or *rouncival* peas, there are three varieties—the white, the green, and the grey. They are all fine eating peas in young growth, and may be sown from the third week in February till the close of April.—*Loudon's Encyclopedia of Gardening*, p. 689. When, therefore, Tusser talks of sowing peas or oats in lieu of wheat, he does not mean that it should be done in the autumn, but in the following spring.

The following hints as to threshing are not to be despised because they happen to proceed from one of the old school.

NOVEMBER'S HUSBANDRY.

"4. Thresh barley as yet, but as need shall require,
Fresh threshed for stover, thy cattle desire;
And therefore that threshing, forbear as ye may,
Till Candlemas coming, for sparing of hay.

5. Such wheat as ye keep, for the baker to buy,
Unthreshed till March, in the sheaf let it lie;
Lest foistiness take it, if sooner ye thresh it,
Although by oft turning, ye seem to refresh it."—P. 47.

Again—

"13. When rain is a let to thy doings abroad,
Set threshers a threshing, to lay on good load.
Thresh clean, ye must bid them, though lesser they earn,
And looking to thrive, have an eye to thy barn.

17. Cause weekly thy thresher to make up his floor,
Though slothful and pilferer thereat do lour:
Take tub for a season, take sack for a shift;
Yet garner for grain is the better for thrift."—Pp. 49-50.

Tusser's injunction to eke out the fresh threshed straw, or stover, as food for cattle, bespeaks great attention to the minutiæ of farm-yard management. To a certain extent it is still acted upon by all good farmers; though the practice is greatly infringed on by the introduction of threshing-machines; by one of which, more straw is produced in a day than a man could knock out in a month; and that, too, for the most part so broken and mutilated as to be very inferior as fodder for cattle purposes. It must, however, be recollected that the prodigious increase in the quantity of corn grown now, as compared with that produced two or three centuries back, has naturally led to other and more efficient modes of preparing it for market. Talk to one of our great West Norfolk farmers, for instance, about substituting the flail for the threshing machine, he will tell you at once the thing is out of the question; it would be next to impossible to get out his crop. Still he does not, nor does any one, question the policy of employing a hand or two at the flail, for the sole purpose of providing a regular supply of straw to lean stock at nights, or, in case of very bad weather, in the day as well.

As to wheat or corn of any kind intended for keeping, he is quite right in advising its being preserved in the straw, rather than in the granary. Turn it on the heap week by week, aye, day by day, it *will* get out of condition in spite of you; but in the stack the only enemy it has to contend with is vermin; and, after all, rats and mice may, without much difficulty or expense, be prevented from entering a corn-stack, and we all know prevention is better than cure.

Making up the floor is a term still in use by threshers, or *taskers*, as they are most commonly called; or simply *making up* is perhaps more usual. "When do you *make up?*" "I was thinkin' o' *making up* in a day or two."

Vetches, or, as they are here called, fitches, are commended as a substitute for hay; but not in a green state, as they are generally used now-a-days for soiling, but with a view to the seed, as well as the stover.

"19. Some countries are pinched of meadow for hay,
Yet ease it with fitches, as well as they may,
Which inned and threshed, and husbandly dight,
Keeps labouring cattle in very good plight.

20. In threshing out fitches, one point I will shew—
First thresh out for seed of the fitches a few:
Thresh few for thy plough-horse, thresh clean for the cow,
This order in Norfolk good husbands allow."—P. 63.

In recommending none but the *head-corn* for seed, which he means by the second line of v. 20, Tusser adopts the principle still in vogue in Lancashire, and probably in many other counties, of *lashing* out the grain.

The plan is simply to set up a door slant-wise on the threshing-floor. Suppose the grain is wheat. Take a fair double handful from the sheaf, and beat it against the upper side of the sloping door. Continue the process no longer than the finest grains are knocked out; leaving the remainder to be finished by the flail. Sometimes, indeed, where whole unbroken straw for thatching is the main object, the *lashing* is continued till the whole is got out; but this is only in peculiar cases. As, however, seed, and not straw, is our present object, I advert to the plan chiefly to show that, by this means the ripest, plumpest and best grains may be secured for the purpose; a point of no little importance, yet it is to be feared not generally so well attended to as it deserves.

The only deviation at all allowable from such a principle, is in the case of a wish to perpetuate any known and intrinsically valuable stock of corn; but the produce of which, may, from soil, or other circumstances, be very inferior in body and colour to the parent seed. Take, for instance, the case of Chevalier barley. I am in want of a quantity for seed. A neighbour, occupying land of a totally different quality from my own, has some which I know to be genuine, but by no means so handsome as the original stock. I am content in this instance to waive *appearance*, for the sake of *purity;* knowing that the apparent deterioration is owing rather to the land than to any defect in the grain. In other words, I prefer sowing a pure, though comparatively inferior sample, to one of whose genuineness I have doubts, however plump and beautiful to the eye.

Change of soil always involves a change of quality. Wheat, for example, however bright and yellow the original stock, becomes grey, and even brown, when sown on *fen land.* But is it the less valuable for *upland* seed? By no means; but all the better for the change. The same rule applies to potatoes. The largest growers in Lancashire always make a point of procuring at least some of their seed from moss land. A change of seed, in fact, may be regarded as a *sine qua non* in arable husbandry, and such it was evidently considered in Tusser's time:—

> "6. Good huswives in summer will save their own seeds:
> Against the next year, as occasion needs:
> One seed for another, to make an exchange,
> With fellowly neighbourhood, seemeth not strange."—P. 182.

True, this may apply chiefly to garden seeds, but the *principle* is the same, whether in field or garden—to preserve as far as possible the purity of stock. Again:

"23. In goafing at harvest, learn skilfully how
Each grain for to lay by itself on a mow:—
Seed-barley, the purest, goaf out of the way,
All other nigh hand, goaf as just as ye may."—P. 186.

I have already explained what a goaf is. The verb to *goaf*, or *gove*, as Tusser has it, is to form a goaf—in the same way that to stack, means to build, or form a stack.

As if still further to impress on the minds of his readers the necessity of attention in the preservation and selection of seed-corn, he thus again recurs to the subject:—

"34. Once harvest dispatched, get wenches and boys
And into the barn afore all other toys:
Choice seed to be picked, and trimly well fy'd:
For seed may no longer from threshing abide.

35. Get seed afore hand in a readiness had,
Or better provide, if thine own be too bad;
Be careful of seed, or else such as ye sow,
Be suer at harvest to reap or to mow."—P. 189.

We have shown, that *fying* means dressing, or cleaning corn for mill or market. It is also applied to the emptying of ponds and ditches, with this difference: a heap of corn is *fy'd up*—a pond is *fy'd out*. The term is sometimes used as a substantive, but only in the case of corn. A tasker says to his partner, "We shall have a large *fye* this time"—meaning a large quantity to *fye* or dress up.

On the subject of harvest I cannot resist quoting the following stanzas; not only as exemplifying the social manners which even then prevailed during this, the husbandman's festival, but as abundant evidence of the good feeling and kind-heartedness of the author:—

"26. In harvest-time, harvest-folk, servants and all,
Should make all together good cheer in the hall;
And fill out the black bowl of blythe to their song,
And let them be merry all harvest-time long.

27. Once ended thy harvest, let none be beguil'd,
Please such as did help thee—man, woman, and child:
Thus doing, with always such help as they can,
Thou winnest the praise of the labouring man.

28. Now look up to God-ward, let tongue never cease,
In thanking of him for his mighty increase:
Accept my goodwill—for a proof go and try;
The better thou thrivest, the gladder am I."—P. 187-188.

The following lines, judging by the punctuation of the first line, do not appear to have been very well understood by the learned editor:—

"9. Grant harvest, lord, more, by a penny or two,"

(Meaning the lord of the harvest, or *harvest-lord.)*

"To call on his fellows the better to do:
Give gloves to thy reapers, a largess to cry;
And daily to loiterers have a good eye.

10. Reap well, scatter not, gather clean that is shorn,
Bind fast, shock apace, have an eye to thy corn;
Load safe, carry home, follow time being fair
Goaf just in the barn, it is out of despair."—P. 183.

In all "companies of harvest-men," as they are called, there is always one, generally appointed by the master, to whom the others look up as leader, or lord. With a view to encourage him to set a good example to his men, Tusser advises the master to give him a trifle extra: and no bad plan either; for, where the "company" is large, much depends on the conduct and character of the "lord." He ought to maintain a steady uniform rate of work, avoiding alike the extremes of slothfulness and slovenly haste.

The practice of giving gloves to the reapers still prevails in many places; as does also that of hallooing largess; though not perhaps so much for the gloves as for certain pecuniary donations they *gather* during and after harvest, and which are called *largesses*. *Harvest gloves* are made of leather, sown very strong, rather for use than ornament; the sole object being to protect the hand from thistles, and the like rough weeds, which *ought* not, but sometimes *are*, in the standing corn.

Our attention has been hitherto chiefly occupied with the culture and after-management of wheat. I shall now proceed to the directions he gives for those of barley; a subject of almost equal importance to Norfolk farmers, as relating to, what has frequently been denominated, their staple commodity.

"MARCH'S HUSBANDRY.

"12. Sow barley in March, in April, and May,
The later in sand, and the sooner in clay.
What worser for barley, than wetness and cold?
What better to skilfull, than time to be bold?

13. Who soweth his barley too soon, or in rain,
Of oats and of thistles shall after complain:
I speak not of May-weed, of cockle and such,
That 'noieth the barley so often and much.

14. Let barley be harrowed, finely as dust,
Then workmanly trench it and fence it ye must.
This season well pli-ed, set sowing an end,
And praise and pray God, a good harvest to send.

15. Some rolleth their barley, straight after a rain,
When first it appeareth, to level it plain;
The barley so us-ed the better doth grow,
And handsome ye make it, at harvest to mow."—P. 128.

March, April, and May, to which we modern farmers occasionally add February, appear at first rather a formidable latitude to allow for seed time; but it is nevertheless true, that barley *is* sown in each of these months:

"The later in sand, and the sooner in clay"—

By which is meant, that warm, sandy, and gravelly lands ought to be sown the *last*, and cold clays the *first*, of the season. If the weather be fine, and the surface dry enough to work well, the stiffest and heaviest land can hardly be sown too early—say from the middle of February to the end of March; and probably nine times in ten, the earliest sown will be the best crop. Light, warm, gravelly soils, on the contrary, will stand a much better chance, if deferred till the beginning or middle of April; and instances have been known of very fair crops from even a May sowing. I have heard my father tell of 14 coombs (7 quarters) an acre, having been produced from seed sown on Bungay fair-day, the 14th of May. But does it thence follow that this is the properest time for sowing barley? By no means. It was an exception, and a very singular exception, to the general rule. I have no doubt it did occur; but I should think but meanly of his judgment, who, on such a vagary, thought proper to found his general practice.

Fitzherbert, who has already been noticed as cotemporary with Tusser, has the following remarks on barley sowing:—

"In some countreys they do not sowe theyr barley tyl May: and that is most comenly upon gravel or sandy ground. But that barley generally is never so good as that that is sowen in March. For yf it be very dry wether after it be sowen, that corne that lyeth above, lyeth dry and hath no moisture, and that that lieth underneth cometh up, and when rayne cometh, then spredeth that that lieth above, and oft times it is grene when the other is rype, and when it is threshen there is muche lyght corne," &c.

By the bye, Tusser makes no mention of any particular stock of barley, though he does of wheat. But Fitzherbert, on this point says—

"It is to be knowen that there be thre maner of barleys, that is to say *sprot*" (sprat) "barley, *longe-eare*, and *beare* barley that sum men call *byg*.

"*Sprot* barley hath a flat eare, most commonly 3 quarters of an ynch brode, and 3 ynches longe, and the cornes be verye great and whyte, and it is the best barley.

"*Long-eare* hath a flat eare half an ynch brode, and 4 ynches and more of lengthe. But the corne is not so greate nor so whyte, and soner it will turne and growe to the otes.

"*Bere* barley or byg, wolde be sowen upon lyght and dry grounde, and hath an eare 4 ynches of lengthe or more set foure square lyke Peke wheate small cornes and lytle floure; and that is the worst barley."

As to barley turning or growing to oats, I apprehend, all that can be said is, that some particular variety may be more infested with wild oats than another; but that *any kind of barley* should be transformed into another distinct species of grain is absurd.

Amongst other operations of husbandry Master Tusser has not forgotten that of weeding the growing crops:—

"10. In May get a weed-hook, a crotch, and a glove,
And weed out such weeds as the corn doth not love.
For weeding of winter-corn, now it is best;
But June is the better for weeding the rest.

11. The may-weed doth burn, and the thistle doth fret;
The fitches pull downward both rye and the wheat;
The brake and the cockle be noisome too much,
Yet like unto boddle no weed there is such.

12. Slack never thy weeding, for dearth nor for cheap;
The corn shall reward it, ere ever ye reap:
And specially where ye do trust for to seed,
Let that be well used the better to speed."—P. 152.

The *boddle* or *buddle* above mentioned, is the *Chrysanthemum segetum* of Linnæus, and is as noxious and unpopular a weed in our days, as in those of Tusser. In the 12th stanza he once more reiterates the necessity of attention to cleanliness in the case of seed-corn.

And now for a hint on fallowing:—

"23. In May at the farthest, twi fallow thy land;
Much drought may else after cause plough for to stand:
This tilth being done, ye have passed the worst;
Then after who ploweth, plow thou with the first.

24. Twi fallow once ended, get tumbrel and man,
And compas that fallow as soon as ye can.
Let skilful bestow it where need is upon;
More profit the sooner to follow thereon.

25. Hide headlands with muck, if ye will to the knees;
So dripped and shadow'd with bushes and trees:
Bare plots full of galls if ye plough overwhart,
And compas it then, is a husbandly part."—Pp. 155–6.

This *twi fallowing* means that the fallows should have two earths in May: no bad plan, provided the earths do not follow each other too closely; but sufficient time is allowed between each ploughing for the weeds to vegetate.

The second ploughing over, the farmers of those days proceeded, with "tumbrel and man," to set a coat of manure, or, as Tusser calls it, "compas," (compost) on the fallow. As a preparation for wheat, we should say this was premature; for much injury must be done to the manure by the weather, during the interval between May and wheat sowing. Muck applied too soon exhausts its goodness upon weeds, and not corn. The modern system of husbandry has effectually remedied this evil, by dispensing with naked fallows altogether; and herein we perceive the great superiority of the new over the old mode of management. There is no mention of turnips or any green crop in the time of Fitzherbert and Tusser; nor of any other preparation either for barley or wheat than the eternal fallow. *That* was the panacea for all defects, both of soil and cultivation. *Now*, what a difference! Barley is, with very few exceptions, preceded by turnips, and wheat by clover, peas, or beans. *The ground is always occupied*, and there is neither time nor space for weeds to grow. For this reform in our British husbandry we are mainly indebted to Jethro Tull, and his introduction of the drill system, of which he has been justly styled the father. Tull was immensely superior to any of his contemporaries; and his practice may be said to be almost a century in advance of his age. Crude and imperfect might be his speculations; but, whatever they were, they bore the stamp of originality, and contained the germs of the greater part of those improvements by means of which the agriculture of Britain was destined, at no very distant period, to become a pattern to surrounding nations; for, as has been well remarked by Cuthbert W. Johnson, Esq., in an interesting paper on "Jethro Tull and his Husbandry,"—

"His deeds, his triumphs, it is true, were of the quiet peaceful kind with which the world in general is little enamoured; but their results, their value to the land of his birth, were of no mean order. His drill, his horse-hoe, have saved his country, in seed alone, the food of millions; and, when used as a distributor of manure, it has done, and will hereafter accomplish greater things." * * * * *

"His researches, his successes, his example, excited a spirit of enquiry which since his days has hardly ever entirely slumbered. He was certainly the first who dared to boldly quit the beaten track, which had been used by the farmer for ages, and follow a way of his own. And although he has been well followed and imitated by succeeding cultivators, who have availed themselves of discoveries and machinery of which Tull had not the assistance, yet there have been none who have since excelled, or perhaps equalled him, in the boldness and originality of his conceptions, or in the energy with which he realised them."—*Quarterly Journal of Agriculture*, No. 51, p. 361.

But this passing tribute to the memory of the father of the drill husbandry must not interfere with a due sense of the merits of his predecessor by some hundred years at least.

Once more, therefore, I return to Master Tusser and his "Five Hundred Points;" my extracts from which must of necessity be restricted within such limits as my allotted space, rather than my wishes, point out.

The line from v. 25, already quoted, requires a passing notice:—

> "Bare plots full of galls, if ye plough overwhart," &c.

It will be recollected that Tusser is here speaking of the management of a fallow. *Galls* are synonymous with *sand-galls*, and is essentially a Norfolk term for *veins of sand*, most commonly occurring in a stiff clayey soil. Troublesome as they are to the drainer, there is no doubt but that, a course for the water once obtained, either by means of tiles, stones, heath, or any of the numerous materials resorted to for that purpose, these *galls* or *sand-veins* do serve to facilitate its passage from the land; operating, in fact, as so many filters, through which the moisture escapes, first into the drains, and from them into the ditches and lower parts of the field. In proof of the benefit of these "plots full of galls," it is a fact well known to all practical drainers, that the more solid and tenacious the clay, the more numerous ought to be the drains. In Norfolk phraseology, they will not *draw* beyond a certain distance; but if the same kind of soil be interspersed with veins of sand, or *galls*, or *gault*, the distance between drain and drain may be much increased, and yet the land be as dry and drier than if such drains were ever so thick. The reason is obvious—*they draw further*, because the subsoil is more porous than mere clay, without the sand-galls. With all this, however, Tusser had nothing to do; draining not being one of the "points" included in his "five hundred." The only instances in which he alludes to the subject evidently imply water-furrowing, or *surface*, not *under-draining*. Thus :—

> "Seed sown, draw a furrow, the water to drain,
> And dyke up such ends, as in harm do remain."—P. 18.

Again—

> "Seed husbandly sown, water-furrow thy ground,
> That rain, when it cometh, may run away round."—P. 32.

For wet pastures, he seems to trust, not to the mole-plough, but to the mole *without* the plough :—

> "If pasture by nature is given to be wet,
> Then bear with the mole-hill, though thick it be set:
> That lamb may sit on it, and so to sit dry,
> Or else to lie by it, the warmer to lie."—P. 111.

He also enjoins the draining of marshes, or, as he terms them, *marishes* :—

> "The fen and the quagmire, so marish be kind,*
> And are to be drained, now win to thy mind;
> Which yearly undrained, and suffered uncut,
> Annoyeth the meadows that thereon do but."—P. 154.

What means he then by the lines—

> "Bare plots full of galls if ye plough overwhart,
> And compas it then, is a husbandly part?"

In the first place, to plough overwhart is to plough at right angles across the former furrows. This is a Norfolk term, I suppose a corruption of *athwart*. It is sometimes used as a verb—"Has this field been cross-ploughed?" "Yes; 'twas *wharted* in June." "I set on the muck, and *wharted* it in." But I do not apprehend that this was Tusser's meaning; which I take to be simply this :—To draw a furrow "overwhart" the stetches, or ridges, and especially in the veiny or more porous spots, in order to secure a dry bed for the "compas," or manure; for he seems to have been well aware that mucking without draining, even in the imperfect manner then in vogue, was but a waste of money.

If, then, there was such importance attached to the superficial drains of those early days, how much greater is the benefit derivable from the modern improved system? The labourers will tell you, and I think truly, that the whole expense will be defrayed by the first corn crop. This I know, that I have myself occupied heavy land which, *before* draining, yielded but 3 coombs an acre of wheat, but which, *after* draining, produced 10.

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* I. e.—If worth draining.

It is not often that our author ventures on a pun, but the following exception occurs in his instructions to sheep-shearers. I extract it not however on this account, so much as for its plain common sense:—

> "Reward not thy sheep, when ye take off his coat,
> With twitches and patches as broad as a groat;
> Let not such ungentleness happen to thine,
> Lest fly with her gentles do make it to pine."—P. 162.

The following directions for making malt, a practice then in general use among farmers and other householders, will amuse; though, alas! the grapes to us are sour:—

> "House may be so handsome and skillfulness such,
> To make thy own malt it shall profit thee much.
> Some drieth with straw, and some drieth with wood:
> Wood asketh more charge, and yet nothing so good.
>
> Be suer no chances to fier can draw
> The wood, or the furzen, the brake or the straw.
> Let Gillet be singing, it doth very well,
> To keep her from sleeping, and burning the kell.
>
> Malt being well speered the more it will cast,
> Malt being well dried, the longer will last.
> Long kept in ill soller (undoubted thou shalt)
> Through bowds without number lose quickly thy malt."—P. 258.

The kiln in Norfolk is generally called the *kell.* The kind of fuel here recommended, would not, it is to be feared, with all Miss Gillet's vocal aid, very well accord with the practice of our modern maltsters; whose drying materials are for the most part of a more substantial nature, viz:—coke, and stone coal; producing no blaze, nor smoke; consequently, there is with them little or no danger of "burning the kell."

The *spear* of the malt, is what we call the *acrospire;* and is, in fact, the incipient blade or stem of the future plant; this acrospire should be *well up,* as it is termed, especially in malting *for an increase,* (generally the case with retail dealers). By "*well up o' the back,*" is meant that the spear or shoot should be distinctly seen protruding itself under the husk, and along the back of the grain, its whole length. And where very "well up" indeed, or what Tusser calls "well speered," the point of the acrospire will show itself at the opposite end of the grain from where it began to germinate. But those who malt for their own consumption, prefer an article not quite so much advanced, say *three quarters up;* choosing rather to forego quantity for quality, and specific gravity.

The root, when dried, is rubbed off by the operation of skreening, and forms a useful article of food for sheep and cattle, under the name of chives, or malt cooms, the value of which fluctuates according to the mildness or severity of the season, between 2s. 6d. and 4s. a sack of four heaping bushels. They are also occasionally used as manure both for turnips and wheat; though for this purpose those are preferred which drop through the kiln floor into the opening beneath, called *the dunge,* and hence known as *dunges,* or *dunge-muck.* These have undergone a greater degree of heat; and in fact approach nearer to a charred state, than such as are obtained from the main body of the malt by skreening. In consequence, though more valuable for manure, they are far less so, being in fact unfit for feeding purposes.

The importance of good dry keeping for malt after it is made, is here very properly insisted on. "Long kept in ill soller," means kept in a loft or upper room, probably without sufficient attention to the exclusion of air; under which circumstances, the malt loses its fire, as it is technically termed, becomes clung, and perhaps actually turns moist; not only to the great detriment of the malt, but the sure forerunner and producer of that most destructive little insect, the bowd, or weevil, which is far easier introduced into, than banished from, stores and granaries.

In August, which Tusser reckons the end of the farmer's year (beginning, as we have seen, in September), he advises a journey, partly in the way of business, partly of recreation, before the resumption of the year's labours; and from this, as not the least curious portion of his book, I select the following stanzas:—

"This lesson is learned by riding about,
The prices of victuals the year throughout;
Both what to be selling, and what to refrain,
And what to be buying to bring in again.

Though buying and selling doth wonderful well,
To such as have skill how to buy and to sell;
Yet chopping and changing I cannot commend,
With thief and his marrow for fear of ill end.

The rich in his bargaining need not be taught,
Of buyer and seller full far is he sought;
Yet herein consisteth a part of my text,
Who buyeth at first hand, and who at the next.

At first hand he buyeth, that payeth all down,
At second, that hath not so much in the town:
At third hand he buyeth, that buyeth of trust,
At *his* hand, who buyeth, shall pay for his lust.

As oft as ye bargain for better or worse,
To buy it the cheaper, have chinks in thy purse;
Touch kept is commended, yet credit to keep,
Is pay and dispatch him, ere ever ye sleep.

* * * * *

Thy market dispatched, turn home again round,
Lest gaping for penny thou losest a pound:
Provide for thy wife, or else look to be shent,
Good milch cow for winter, another for Lent.

In travelling homeward, buy forty good crones,
And fat up the bodies of those seely bones:
Leave milking, and dry up old Mulley thy cow,
The crooked and aged to fatting put now.

At Bartlemew tide, or at Sturbridge fair,
Buy that as is needful, thy house to repair;
Then sell to thy profit, both butter and cheese,
Who buyeth it sooner, the more he shall leese."—Pp. 190-192.

The "crones" he adverted to, are, or ought to be, what are called *broken mouthed,* not wholly *toothless* ewes. Sheep may crone from various causes; more frequently perhaps from hard, improper food, as turnips, particularly swedes, than from old age; for long after the introduction of this root, it was, and still is, in many places, the practice to turn a flock of all ages, from a hogget, to a three, four, and five-shear sheep, into a field, or part of a field, the produce of which, teeth or no teeth, they were expected to consume, as well to their own advantage, as to that of their owners! Thus the young sheep destroyed or greatly injured their coming teeth, and the old ones could not make a better hand of breaking the turnips for want of teeth; and so, whether young or old, both did badly, to the no small dismay of the farmer, who could not for the life of him conceive why they should, as it were, starve in the midst of plenty. A glance at the bloody marks on but too many of the scooped turnips, might, one would think, have at once explained the cause. A little contrivance has in a great measure remedied this evil, and the practice now generally adopted, of cutting the turnips, has effectually removed one source of *cronism* (if I may be allowed to coin a word for the occasion.) I do not mean to assert that any such *cause* existed in the time of Tusser, because turnips of any kind were then altogether unknown: but even in his days, there might be, and doubtless were, certain descriptions of food, which tended more than others, to the premature destruction of the teeth. Therefore, when he tells the farmer to "buy forty good crones," he evidently means sheep, which, though *broken mouthed*, as we moderns express it, are yet comparatively young.

Herein indeed, consists the judgment and ability of selecting such as are "*good*," for, it is not enough that they are *crones*, but they must have *become crones*, from some accidental cause, and not from sheer old age. Many a sheep, though with a broken mouth, may if young, *do*, and pay infinitely better, than an animal with the same defect caused by the wear and tear of time. There is perhaps no greater improvement of modern times than this very one—the feeding and field treatment of hoggets, and, indeed I might add, of sheep in general.

Sturbridge fair above mentioned, was doubtless at that period a mart of considerable importance; being relied on for the yearly supply of almost every kind of household goods, not only to the families of tradesmen and farmers, but to the gentry for many miles round.

It originated in a grant from King John; but ultimately it became vested in the magistrates and corporation of Cambridge; from which place it is distant about two miles.

"In 1613 Stourbridge fair acquired such celebrity that hackney coaches attended it from London. Subsequently not less than sixty coaches plied at this fair, which was the largest in England. Vast quantities of butter and cheese found there a ready market: it stocked the people of Norfolk, Suffolk, Essex, and other counties with clothes and all other necessaries; and shopkeepers supplied themselves from thence with the commodities wherein they dealt."—*Hone's Everyday Book*, 1301.

"The importance of Stourbridge fair may be estimated by the great extent of the ground it occupied. The circuit of the fair, beginning at the first show-booth, round by the cheese fair, the wool fair, and hop fair; then onwards to ironmongers' row, to the horse fair; northward on to the pottery fair, along the margin of the lane, by the coal fair; then southward to the outside of the inn, and proceeding in a direct line by the basket fair to the point whence you started, made full three miles."—*Hone's Year Book*, 1548.

I have now nearly accomplished my allotted task of exhibiting to the reader an analysis, however imperfect, of the agricultural portion of this very curious and, in some respects, extraordinary book. I might have greatly multiplied my extracts from its pages; for the main difficulty was, not where to begin, but where to end my selections. However, enough has been produced, to show the nature and merits of this antique, I may add, *unique* specimen of authorship. But, appended to the "Points of Husbandry," are divers sonnets and short pieces, evincing a great spirit of research, and, considering the age in which they were written, no small share of poetical merit. Take the following as an example :—

"*A Sonnet upon the Author's first Seven Years' Service.*

"Seven times hath Janus ta'en new year by hand,
Seven times hath blustering March blown forth his pow'r
To drive out April's buds, by sea and land,
For minion May to deck most trim with flower:
Seven times hath temperate *Ver*, like pageant play'd,
And pleasant *Æstas*, eke, her flowers told:
Seven times *Autumnus*' heat hath been delay'd,
With *Hyems*' boisterous blasts, and bitter cold;
Seven times the thirteen moons have changed hue;
Seven times the sun his course hath gone about;
Seven times each bird her nest hath built anew,
Since first time you to serve, I chused out.
Still your's am I, though thus the time hath past,
And trust to be, as long as life shall last."—P. 218.

Again—

"*Posies for the Parlour.*

"As hatred is the serpent's noisome rod,
So friendship is the loving gift of God.
The drunken friend is friendship very evil,
The frantic friend is friendship for the devil.
The quiet friend, all one in word and deed,
Great comfort is, like ready gold at need.
With brawling fools that wraul for every wrong,
Firm friendship never can continue long.
In time that man shall seldom friendship miss,
That weigh'th what thing touch kept in friendship is.
Ofttimes a friend is got with easy cost,
Which used evil, is as quickly lost.
Hast thou a friend as heart may wish at will?
Then use him so to have his friendship still.
Would'st have a friend, would'st know what friend is best?
Have God thy friend, who passeth all the rest."—P. 288.

From the foregoing extracts and many others my limited space forbids me to give, it is apparent that Tusser was not less eminent for his devotional feelings, than for his skill as a farmer, or his ability as a writer. Scarcely a page indeed, but teems with gratitude towards his maker, and the best and kindliest disposition towards his fellow-man; enjoining on *all* the virtues of charity, forbearance, and honesty in every worldly transaction; more particularly where the interests of the labouring poor are concerned. As he well observes in his "Husbandry Lessons;"—

> "God sendeth and giveth, both mouth and the meat,
> And blesseth us all with his benefits great:
> Then serve we the God who so richly doth give,
> Shew love to our neighbours, and lay for to live.
>
> As bud by appearing betok'neth the spring,
> And leaf by her falling, the contrary thing,
> So youth bids us labour, to get as we can,
> For age is a burden to labouring man.
>
> A competent living, and honestly had,
> Makes such as are godly both thankful and glad:
> Life, never contented, with honest estate,
> Lamented is oft, and repented too late.
>
> Count never well gotten what naughty is got,
> Nor well to account of, which honest is not:
> Look long not to prosper, that weighest not this,
> Lest prospering faileth, and all go amiss."—P. 22.

We have seen how well versed he was in all the minutiæ of a farmer's occupation, and yet, with every requisite for success, I am constrained to admit, that he appears to have failed in almost all his undertakings. Old Fuller quaintly observes of Tusser, "He spread his bread with all sorts of butter, yet none would stick thereon."

"Yet I hear no man to charge him with any vicious extravagancy, or visible carelessness, imputing his ill success to some occult cause in God's counsel." * * *

"I match him with Thomas Churchyard, they being marked alike in their poetical parts, living in the same time, and statured alike in their estates, both low enough, I assure you."—*Fuller's Worthies of Essex*, p. 334.

Admitting the fact in its fullest extent, of poor Tusser's want of success in his worldly undertakings, it has always appeared to me that this circumstance is capable of easy explanation without in any way compromising his character, as a man of strict honour and integrity, and a good, practical christian. Let us consider for one moment, what were his early associations, and what the kind of education he received. I have already remarked, that there was nothing in his *professional* habits, that could, one would think, in the remotest degree have influenced him in the after-choice he made, of so secluded, I might add, so difficult an occupation as that of a farmer, of course hazardous in proportion to its difficulty. If it be true that all trades require an apprenticeship, surely the multifarious duties of the husbandman, varying as they necessarily must, with every change of season, soil, and situation, offer no exemption to the necessity of such a course of strict and constant preparation. All the apprenticeship that a person like Tusser could have had, was after, and not before, he entered upon the pursuit of a farmer—a perilous state of things at any time, and which not even after-success, if success under such circumstances were possible, could justify. A man embarking in such a speculation, must lay his account to be cheated in all points, and by everybody about him; and whatever knowledge he acquires of his new avocation, is bought at an enormous, perhaps ruinous, expense. And all this is natural, and strictly in accordance with the principles by which the acquisition of any kind of science is always governed. There is no royal road to prosperity, in rural, any more than in commercial, and many other enterprises. The wonder would have been, had Tusser (excellent as he might have been as a musician, a poet, and a scholar,) succeeded in so novel, and incongruous an undertaking. I intend not to mention names, but there are very many eminent professional gentlemen of my acquaintance, of whose success as practical farmers, and buyers and sellers of sheep and cattle, I may and do entertain serious, and I hope not unreasonable doubts. Nay, it is no imputation on their characters, if peradventure they should even fall short of my old friend Tusser, in the management of land, and the feeding and breeding of stock. One point I think I may fairly take for granted, that however well they may farm, the chances are against their giving so good an account of their proceedings.

Hawkins, in his History of Music, thus expresses himself of poor Tusser and his book:—

"It discovers such a degree of economical wisdom in the author, such a sedulous attention to the honest arts of thriving, such a general love of mankind, such a regard to justice, and a reverence for religion, that we do not only lament his misfortunes, but wonder at them; and are at a loss to account for his dying poor, who understood so well the method to become rich."—Vol. 3, b. iv., c. 5.

"He seems," says Stillingfleet, "to have been a good-natured cheerful man, and though a lover of economy, far from meanness, as appears in many of his precepts, wherein he shews his disapprobation of that pitiful spirit which makes farmers starve their cattle, their land, and every thing belonging to them; chosing rather to lose a pound than spend a shilling. Upon the whole, his book displays all the qualities of a well-disposed man, as well as of an able farmer."—*(See Coxe's Literary Life and Select Works of Benjamin Stillingfleet.*"—Vol. ii, p. 563.)

The book concludes with "The Author's Life," in forty stanzas; of which I shall select the last four, as peculiarly exemplifying that spirit of pious resignation to the divine will, and gratitude for benefits conferred, which pervades all his writings. With these I bid farewell to good old Tusser.

"37. When all is done, learn this my son;
Not friend nor skill, nor wit at will,
Nor ship nor clod, but only God
Doth all in all:
Man taketh pain, God giveth gain,
Man doth his best, God doth the rest.
Man well intends, God foizon sends,
Else want he shall.

38. Some seek for wealth, I seek my health,
Some seek to please, I seek mine ease,
Some seek to save, I seek to have,
To live upright,—
More than to ride, with pomp and pride,
Or for to get, in other's debt:
Such is my skill, and shall be still
For any wight.

39. Too fond were I here thus to lie,
Unless that wealth, might further health,
And profit some should thereby come,
To help withal:
This causeth me, well pleas'd to be,
Such drift to make, such life to take
Enforcing mind, remorse to find,
As need, need shall.

40. Friend, all things weigh'd, that here is said,
And being got, that pays the shot,
Methinks of right, have leave I might,
(Death drawing near),
To seek some ways, my God to praise,
And mercy crave, in time to have,
And for the rest, what he thinks best
To suffer here."—P. 327—8.

WHITTINGTON, Norfolk,
Feb. 24, 1844.

By way of Addenda to the above, I send you the following articles which recently appeared in the *Bury and Norwich Post*: partly as containing a quotation from Tusser not given in my paper, but principally as illustrative of the subject I have endeavoured to elucidate—Farming in the Olden Time.

AGRICULTURE 150 YEARS AGO.

TO THE EDITOR.

Sir,—The following extract from a scarce and curious old volume relating to farming is forwarded to you for insertion in the *Bury Post.* I think most of your readers, who are farmers, would be amused by the perusal of them, if you can find space for their insertion.

I am, Sir, your obedient servant,
A Constant Reader.

Edward Lisle, Esq., a magistrate and gentleman of fortune, of Crux-Easton, in Hampshire, who died in 1722, has the following remarks in his "Observations on Husbandry," which at the present day are novel and amusing:—

"Being in company with Mr. Gooch, a Norfolk gentleman, we discoursed about the turnip husbandry of Norfolk. I could not find that they so much valued the harm the fly did to their turnips while they were young and tender in the leaf, as they did a distemper, or disease, that fell on the roots of their turnips, which they called the *branberry,* which was a warty excrescence, that would sometimes grow to the bigness of one's fist, and that some years this distemper would take whole fields, and after it began to grow in the turnips they would never thrive. No one, he said, could ever find out the cause of this disease. I told him I thought it must proceed from the egg of a worm or fly, that was laid in the turnip, in the place where it had been bit, and the little maggot lay in the hollow place, which, with its tail continually working circularly, formed the juice of the turnip into a round excrescence about itself, in which it continued growing, like that of an oak-apple."

To the Editor of the Bury and Norwich Post.

In common, I have no doubt, with many others of your readers, I was greatly interested in the perusal of the article in your last, headed "Agriculture 150 years ago."

On one point, that which treats of the communication between the author of the old book (Edward Lisle, Esq.) and Mr. Gooch, of Norfolk, on the subject of the disease in turnips, which he calls *branberry,* but which was evidently our *anbury,* excited in me no small degree of curiosity. The precise date of this communication is not given; but the authority of Loudon places it in 1707. If this be so, what becomes of the tale, so often repeated as to have obtained some credit for truth, of the introduction of the turnip husbandry into Norfolk, by Lord Townshend, in 1730, eight years after the death of Mr. Lisle? And be it remembered, too, that Mr. Gooch, in his interview with Mr. Lisle, in 1707, alludes to the disease, not as a thing of recent occurrence, but of some years standing; so that, for aught we know to the contrary, the plant may have been introduced at a much earlier period than is generally supposed. The precise date perhaps it would be difficult to ascertain. They certainly are not mentioned by Fitzherbert in 1538, by Tusser in 1557, or by Barnaby Googe in 1586, though he does make mention of rape. Gerarde in 1597, and Parkinson in 1629, make allusion to the turnip, but only in connection with the garden, and not field culture. Walter Blith, in his "English Improver," 1649, a copy of which is now before me, says nothing about them. By the bye, is this *Blith* identical with the *Blythe*, author of the "English Improver Improved?" Both wrote in 1649. But they are generally considered to be different persons, though the similarity of names, and the well-known liberties taken in matters of orthography at that early period, are by no means decisive evidence of the fact. Certain it is that there is much in *Blythe*, not to be found in *Blith*. The former does, in the edition of 1662, make mention of turnips as an excellent cattle crop; and "Sir Richard Weston," if Mr. Loudon be correct, "must have cultivated turnips before this." His (Sir Richard's) work "On the Husbandry of Brabant and Flanders," was published in 1645. Blythe says, "Sir Richard affirmed to himself, he did feed his swine with them. They were first given boiled, but afterwards the swine came to eat them raw, and would run after the carts, and pull them forth as they gathered them." This evidently implies field culture.

Before I quit Blythe's book, I hope it will not be considered out of place if I quote Mr. Loudon's brief abstract thereof:—

"It is," he observes, "the first systematic work in which there are some traces of the convertible husbandry, so beneficially established since, by interposing clover and turnips between culmiferous crops. He is a great enemy to commons and common-fields, and to retaining land in old pasture, unless it be of the best quality. His description of different kinds of ploughs is interesting; and he justly recommends such as were drawn by two horses (some even by one horse) in preference to the weighty clumsy machines which required four horses or oxen, or more.

Almost all the manures now used seem to have been then well known; and he brought lime himself from a distance of twenty miles. He speaks of an instrument which ploughed, sowed, and harrowed at the same time, and the *setting of corn* was then a subject of much discussion."

The following passage from this quaint old writer will perhaps amuse your readers:—"It was not many years," says he, "since the famous city of London petitioned the Parliament of England against two anusances or offensive commodities, which were likely to come into great use and esteem: and that was, Newcastle coal, in regard of their stench, &c., and hops, in regard they would spoyle the taste of drinck, and endanger the people." Tusser's opinion of hops differed widely from the above, and it was delivered a century before Blythe's.

"*A Lesson where and when to plant a good Hop-yard.*

* * * * *

"Ground gravelly, sandy, and mixed with clay,
Is naughty for hops, any manner of way;
Or if it be mingled with rubbish or stone,
For dryness and barrenness, let it alone.

Chuse soil for the hop, of the rottenest mould,
Well dunged and wrought, as a garden-plot should;
Not far from the water, but not overflown;
This lesson well noted, is meet to be known.

The sun in the south, or else southly and west,
Is joy to the hop, as a welcomed guest;
But wind in the north, or else northerly-east,
To hop is as ill, as a fray in a feast.

Neat plot for a hop-yard, once found as is told,
Make thereof account, as of jewell of gold;
Now dig it, and leave it the sun for to burn,
And afterwards fence it, to serve for that turn.

The hop for his profit *I* thus do exalt,
It strengtheneth drink, and it favoureth malt,
And being well brewed, long kept it will last,
And drawing abide, if ye draw not too fast."

Having alluded to the ploughs mentioned by Blythe, I trust I shall be excused for quoting a passage on this subject from Fitzherbert—(edition of 1555.)

"*Divers maners of Plowes.*

"There be plowes of divers makinges in divers countreys, and in lykewise there bee plowes of iron of divers facyons. And that is because there be many maner of groundes and soyle—some whyte cley, some red cley, some gravel, sum sand, sum mean erth, sum medled with marle, and in many places heath ground; and one plough will not serve in al places, wherfore it is necessarye to have dyvers maners of plowes. In Somersetshyre about Ciscestre the sharbeam that in many places is called the plough head, is foure or fyve fote longe, and it is brode and thyn; and that is because the lande is very toughe, and wold soke the plough into the earthe, if the sharbeam were not longe, brode, and thin. In Kent they have other maner of plowes. Some go with wheles, as they do in many other places, and some wil tourne the shelbrede (the breast) at every landes ende, and plowe all one way."

After describing other varieties, he briefly mentions that "In Leycestershyre, Lankeshyre, Yorkeshyre, Lyncolne, Norfolke, Cambridgeshyre, and many other countreies, their plowes be of divers makinges, the which were to longe a processe to declare how," &c.

By way of *finale* to this rambling account of the farming of the olden time, I will subjoin the following extract from a sermon of Bishop Latimer, preached before King Edward VI, the exact year is not said, but he began his reign in 1547, and died in 1553:—

"My father was a yeoman, and had landes of his owne; onlye he had a farme of three or four pounde by yere at the uttermost, and hereupon he tilled so much as kepte half a dozen men. He had walke for a hundred sheps, and my mother mylked thirty kyne. He was able, and did find the King a harnesse, with hymselfe and hys horse, whyle he came to the place that he should receyve the Kynges wages. I can remembre that I buckled hys harnes, when he went into Blackethe felde. He kept me to schole, or elles I had not been able to have preached before the Kynges Majestie now. He marryed (portioned) my sisters with fyve pounde, or 20 nobles a pece; so that he brought them up in godlines and fear of God. He kept hospitalitie for his pore neighbours, and sum almess he gave to the poore; and all thys did he of the sayd farme."

T.

Feb. 24, 1844.

THE DRAINAGE OF THE COUNTRY.

BY W. MULLINGAR HIGGINS, Esq., C.E., &c., formerly Professor of
Experimental Philosophy at Guy's Hospital.

[*From the Civil Engineer and Architect's Journal for March.*]

During the next three or four years there will probably be such an opportunity of improving the internal resources of the country, as has never before occurred. It is generally understood that the Government intends to introduce, during the next session of Parliament, a general measure, which will, probably, embrace the sewage of towns and the drainage of the land. That such a measure, wisely planned and carried out with skill, will be an invaluable boon to the nation, every one admits; but it may be doubted whether the public is at all aware of the extent of its value, and perhaps not many of its most sanguine promoters. The health of the population in towns, and the improvement of cultivated lands, are the two results which are generally acknowledged; but the effect of a good system of drainage will be scarcely less beneficial to the internal navigation of the country, than to the agricultural condition of the lands which are now, or may be, brought into a state of cultivation. This view of the subject is so important, that a few remarks may not be inappropriate in the present state of the question.

There are numerous rivers in this country which would be of immense value to the districts through which they flow if they were navigable, and would become competitors with the railways for the carriage of merchandize, and the transit of passengers. Many of these have been at former periods large and deep rivers, and have carried vessels of considerable burthen. By great ignorance, or want of attention, and small temporary expenditures, natural causes, which man ought not only to control but to render subservient to the accomplishment of his objects, have, in various ways, so changed their former condition, that they are not only altogether useless for navigation, but are scarcely sufficient channels for the drainage of the country through which they lazily flow. As soon as the commercial wants of some town situated on or near their banks demand a rapid and commodious transit by sea, an engineer is required to give his opinion as to the method of improving the river; dredgings and embankments are immediately commenced, and the streams which had before only tended to the destruction of the channels, are made to assist in their excavation. The difficulty and expense which attend these local improvements, are only known to those who have been engaged in conducting or performing them. And after the expenditure of millions in various parts of this country, during the present century, the good which has been effected is confined to a few districts, and is not appreciated, if in any degree felt, by the country at large.

Should a general plan of drainage be adopted, there will be an opportunity of improving, and perhaps rendering sufficiently navigable, every river in the kingdom. They are the natural and proper channels by which all the waters that fall on the surface of the island should be conducted to the sea. In the present state of the country, these waters are allowed to lie upon cultivated lands, to be evaporated by the heat of the sun, or to collect in low lands, forming bogs and marshes. But, carry them by a perfect system of drains into the rivers, and with a little assistance they will deepen the channels, and improve the outfalls.

It is not my intention, at present, to enlarge upon this subject, as I may, at some future time, offer a few suggestions upon the manner in which this drainage, as a national measure, should be performed, and take a more enlarged view of the benefits that may be obtained. The importance of the measure, however, will entirely depend upon well devised plans and careful execution. The subject is one almost unknown to a large number of engineers, and there is no work in the language which treats the subject systematically. My attention has been many years directed to this and similar pursuits, but although I could mention many admirable reports delivered by British engineers during the last two centuries, in which the great principles of drainage are fully enforced for particular localities, I do not know of any paper containing so excellent a practical view of the subject as is given in one chapter of Gughelmini's work on rivers. I have, therefore, been induced to offer a translation of it. The Italians still look to the writings of this great man as authorities on all questions relating to the motion of water, and although in some particulars he has erred in judgment, the credit given to him by his countrymen can scarcely be denied by us, notwithstanding the advance that has been made in both the theory and practice of hydraulic engineering. It is at present uncertain to whom may be intrusted the works necessary for carrying out the intentions of the Government, but I have no hesitation in saying that a careful study of the following paper, considered in connexion with the works which have been performed in this country, particularly in the Fens, may be the means of preventing many errors that would be fatal to the success of the plans, in the ever-varying conditions of the districts in which the improvements are to be made. It is with the view of assisting those who may be thus employed, and the agriculturists who are attempting to secure the effectual drainage of their particular districts, that I have made the following translation:—

"Beside the large rivers, which have their origin in high mountains, and the torrents which, although they are not fed by springs, have also their birth in mountainous districts, there are channels which carry rain water only, and these commence in the plains. They have seldom if ever been formed by nature alone, but by the art of man, who, to drain his fields and render his ground fit for cultivation, has excavated ditches, into which the rain water immediately flows, and these uniting with others, are finally discharged into a common bed, formed by manual labour, and called a drain,* or by other names, according to the custom of the country, and such drains have their own proper names, in the same manner as rivers. Most of these drains are public property, because the right of introducing the rain water into them is common to many, and by their channels the united waters flow towards their outlet. It happens, however, that some fields have no need of the public drain to keep them dry, and these are they which are contiguous to rivers properly embanked, into which, by means of private ditches, their waters are introduced; but these do not need any explanation, as they are but few, and nature herself teaches the mode of managing them.

"The declivity of plains is generally so small, and the surface so unequal, that it is not possible for the rain water, unless it moves with great impetuosity, to run off from the high to the low lands, and leave the fields in a state of perfect cultivation, particularly in the time of spring and summer, when the grasses greatly impede its discharge. It is true that the waters are ultimately united in low places, and leave the higher free, but it is also true that for this end a long time is necessary, during which the earth, imbibing an excess of moisture, becomes barren; and as there are in the plains low places shut up on all sides by more lofty grounds, the water is collected in them, and not being able to escape, necessarily forms a marsh or bog, as frequently occurs in countries unoccupied or neglected by man. This has made it necessary for civilized nations to cause all the plains to be connected by excavated ditches, and to direct the outlet of these ditches to the places where experience has proved they may find basins or continued low grounds, and along these to excavate a capacious canal to receive the atmospheric water from the drains of the country. From this artifice arose the drainage of all the provinces, which have been brought into a fertile state, but they can only be kept in that condition by the preservation of the first excavations.

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* Scolo, fossa di scolo, condotto, tratturo, discursorio, o in altra maniera.

"These drains have their termination, either in neighbouring rivers, in marshes, in ponds, or in the sea. Those that discharge themselves into rivers can serve only those fields that are at least higher than their beds, if temporary, or than the lowest surface of their waters if permanent. The mouths of drains, where they discharge themselves into a river, may be either open or closed. Those only can have their mouths free, that is open at all times, which have their beds higher, or at least as high, as the greatest flood of the river, for otherwise, if the river be turbid, regurgitation through the drain would stop it with deposits, and close the outfall; hence it is that only higher grounds can be drained by open conduits in rivers. But if these channels are embanked, (a certain evidence that the flood rises over the surface of the country), it will not be possible to have the mouth always open, but some mechanical arrangements will be necessary to prevent the floods of the river from being introduced into them, and that the rain waters, if there are any, should be retained either in them, or in the ditches of the fields, until after the flood has subsided, when the impediments at the mouth may be removed, and the water discharged.

"Many artifices have been adopted to prevent the regurgitation of rivers in drains; but this is not the place to speak of them: they may be seen in Baratteri's "Architettura dell' Acque," part I, lib. 8, cap. 19. The most common are the before mentioned. We should, however, in these cases, carefully observe the conditions of the districts, which give occasion for as many rules.

"1. If the lands which are to be drained by a channel, furnished with a gate, are on the same horizontal plane, it is not necessary that the sides of the conduit should be embanked; because when the gate is closed the water is unable to overflow any one part, or if through too great an abundance it should overflow a part, it will distribute itself equally over all the country, an effect embankments could not prevent, which are therefore of no utility; but if the inundation of the country should not be prevented, (in case the gate should break, an accident very rare,) other cautions will be demanded.

"2. If the country should decline towards the mouth, as it commonly does, it will be necessary that the banks of the drain towards the outlet should be so much elevated as to equal the height of the highest part, or the water that flows down will overflow and cause inundations. Hence it is

"3. That the districts which have a great declivity on the surface cannot have drains with gates, without overflowing the low lands when they are closed; and therefore in such a case we ought

"4. To separate the drains of the high lands (as far, at least, as the highest flood of the river) from those of the lower grounds, and to make the former discharge by an open mouth, enclosed with banks sufficiently high to support the regurgitation of the river, while the latter may be provided with a gate and banks if necessary, in the manner above named. It is true that if the water of the open drain should not run in such abundance as to prevent the regurgitation of the high waters, during the freshes, a deposit will be formed, and there may be so small a quantity of water in the drain, that it has not sufficient power to remove the impediments when they are formed: in this case new and repeated excavations will be required.

"5. The flood-gate may be closed when the river is swollen, until the water in the drain shall be raised to the same level, and then it may be opened to discharge such additional water as may flow into the drain; in this way the regurgitation of the flood will be prevented, and the water that comes afterwards into the drain, will be discharged without inundating the country.

"6. The low grounds may be drained by the use of flood-gates either in rivers or in the channel above named, but more easily by the former than by the latter, because the water of the river is lower than that of the drain, and also because the deposit which is formed in the channel cannot be produced in the river, in which the fall must consequently be greater.

"The drains which fall into marshes, stagnant waters, and similar places, have generally an open discharge, and the reason is, because the difference between the highest and lowest surface of the water in the marshes is, for the most part, not so great as to require the application of a flood-gate (which is difficult to manage) to prevent regurgitation; and especially as the fields which are to be drained into them are higher than the surface of the marshes, and it is from the fields that the water comes which swells them; besides which, no deposit is to be feared from the regurgitation of the waters. Sometimes, however, the country has so little declivity in those parts contiguous to the marsh, that remaining dry the great part of the year, in consequence of its elevation, it only spreads the waters at the time of floods. Under such circumstances it may be useful to defend the higher ground by surrounding it with banks, so that the water of the marshes increasing, may not overflow it, and at such times to arrest the rain-water in the fields, which, when the surface of the water in the marshes begins to fall, may be discharged into it by one or more cuttings in the bank. Such localities cannot be brought into a state of perfect cultivation, being by nature marshy, but they must be kept for pasture or meadows, to which the dampness of the soil is useful. When marshes are occasionally much flooded, as, for example when rivers enter them, or when rivers overflow their banks, flood-gates may be used at the mouth of the drains, but before they are introduced, it is necessary to consider the duration of the floods, the state of the country, and other similar questions, for upon these their usefulness depends.

"Those channels which have an immediate discharge into the sea, must be differently treated according to their circumstances. The rise and fall of the tides, and the swell produced by winds, is sometimes productive of damage, and sometimes of advantage, to the mouths of the drains. Every one knows that the sea forms its own banks, and throws up mounds of gravel upon the shore. The height of these defends the interior low grounds from inundation, which would otherwise be the result in time of storm and sometimes also at the time of the usual high tides. These beaches must be cut to form an outlet, but the openings must, at the same time, be protected by strong banks, in order that when the water of a stormy sea introduces itself into the drain, it may not spread into the back country, and overflow it for ever, as has sometimes happened in low grounds. Therefore, not to run such a risk, they are usually provided with strong gates, which being shut when the sea is high, keep it within its ordinary limits, and being opened when it is low, give a free discharge to the water that was retained during their closure. In some drains, however, which on account of their length, or for some other reason, carry a large quantity of water at all times, and are equal to small rivers, it may happen that gates are not necessary, the continued flow of the water of the drain being sufficient to keep back the water of the sea; nor are they necessary in those places where the country rises as it recedes from the shore. By comparing the elevation of the sea when tempestuous with the level of the country, it is easy to determine what drains require gates, and what kind of banks should be employed. There are some drains which have outlets so large and deep that they form small harbours, and give shelter to vessels of moderate size. This may be occasioned by the natural depth of the sea in that situation, by the abundance of the water in the drain, or by the position of the shore; it may arise from the direction of the mouth being such that it is not exposed to those impetuous winds, which, in tempest, drive sand or beach to the coast, or from the great rise and fall of the sea; or it may be occasioned by the operation of other causes, which prevent the formation of a deposit, and promote excavation, but which cannot be described without a particular examination of the place. On the contrary, the outlets of some other drains are closed when certain winds blow, and these drains must either be diverted and discharged in other places, or the water must be penned up so that it may enter the sea with velocity, and remove the deposit formed at its mouth.

"In drains not large enough to have a good outlet, it is especially necessary that they should be sufficient to carry all the surface water of the country, and that they should not overflow their banks. It must, therefore, be borne in mind, that as they have, under ordinary circumstances, a comparatively small quantity of water, they must, when the stream is turbid, have a considerable fall before they can establish their beds. In a plain of little declivity the bed would be elevated above the level of the country, and the drain be rendered incapable of receiving the surface waters. In streams of this kind it is useless to expect any excavation, but it is, on the other hand, necessary to form the channel by manual labour, and prepare the course the waters should have to their discharge.

"We must then be careful that the channels shall be excavated sufficiently deep to receive the water in great abundance, so that it may not be raised above the plane of the country, and, if possible, not within the drains that run into them. In addition to this, every excavation is superfluous, as, for the drainage of the land, it is enough that the private drains should remain dry after the fall of rain. Such benefits, however, cannot be obtained in low places with any amount of excavation; for, the bed being horizontal at a lower level than the place of its reception, where the mouth of the conduit ought to be, if greater excavations were made, they would only serve to produce a greater regurgitation, or to cause an eddy; besides which, when the excavations are deeper, a greater width is required, which would, in such a case, be a waste of ground, without a corresponding utility. It is true, that in the excavation of these channels it is better that they should be made too large than too small, for, although the drains of the country carry only limpid waters, they must always hold some earthy compounds brought from the surface of the cultivated land, particularly at the time of heavy rains, or, if from nothing else, from the washing and breaking down of the banks of the conduit, and therefore, the water having but little velocity, in consequence of the little declivity of the bed, as well as the small quantity of water, the earthy matters being deposited, must raise the channel. The water of the drain being raised by the elevation of the bed, the surface waters of the country can no longer have a free discharge: hence it is, that the greater the excavation, so much the longer will it be before the bed is raised to that height at which further deposition will become injurious; but, on the contrary, if the first excavation be too small, the defect will be immediately felt, and will continually increase. Hence it is, that the drains not being able to maintain a free discharge, and being necessarily obstructed by the inevitable accidents above mentioned (besides many others which ignorance permits and malice creates), repeated excavations are required, which must, as the occasion demands, be done according to established rules."

OATMEAL AS FOOD.

Sir,—In my letter on the Poor Laws, given in your last January number, there was an error—in printing the word *stone*, it should have been *stove;* which gives me the opportunity of saying a few words on the dietary of the country.

I think the working classes lose from not consuming more of the preparation of the oat for food than they do; which, I think, is in some measure owing to the difficulty of preparing it; for it cannot be done by the present method but on a large scale, as it will not pay the expense without preparing several bushels at a time. Did any person adopt a plan, and bring it into use, by which a bushel or two of oats could be prepared into meal, he would be doing the public a service. In Wales, where the inconvenience is felt, it is not uncommon for more than one party to bring a given number of bushels of oats to make a baking, and to divide to each his share of oatmeal, after it has undergone the necessary processes, which circumstance in some measure proves what I am urging.

I beg to call the attention of the Commissioners at Somerset House to the matter. Did they order those that have the management of their experimental department, perhaps they could contrive an iron stove and mill, for the purpose of preparing small quantities of oats into meal, which might become the appendages of the Union Houses of the kingdom, and by that means be brought into general use. I must confess I was a little surprised to learn from the newspapers that there was a prejudice in some parts of England against using so palatable and healthy a food as preparations from oatmeal, which surely must indicate the slow march of improvement.

I am, Sir, your most obedient servant,

CADOGAN WILLIAMS.

BRIDGEND,
February 7, 1844.

PERFORATED DRAINING TILES.

At page 227 of your July number for 1841, I questioned the capability of the tile then in general use for field draining, and suggested that a perforated tile should be tried; urging that the openings besides admitting water served as air-channels also, liberating the pent-up gases, drying up the damp which would not drain, and raising the temperature of the ground several degrees.

Since the period when the letter referred to was written, I have seen it denied that the perforations can serve any useful purpose. Now whatever was advanced failed to convince me of their inutility; and I think there is less chance than ever of my becoming a convert to that notion, as I find that a Mr. Watson has recently invented, patented, and proved the perforated draining tiles. They are cast in iron, 4 feet long, and 3 inches in diameter; also in clay from 4 to 12 inches in diameter. The perforations are of two kinds, one, a conical hole, the smaller end of the cone being at the outside; the other with slits, the smaller part being outside, enlarging to the inside, which prevents them from clogging up with the soil.

Of the price of these tiles I can say nothing, as I do not know it, nor do I think they are intended for agricultural purposes. They seem to have been invented to drain the clay cuttings on railways, which, in their undrained state, were so often inclined to slip, *and their utility in the trials made on such land was placed beyond doubt.*—Your's truly,

T. W.

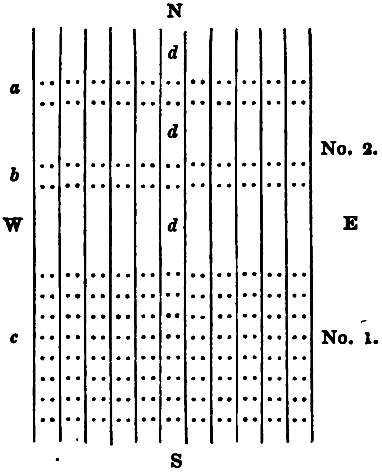
March 1, 1844.

ON THE CAUSE OF A SINGULAR PARTIAL FAILURE IN A CROP OF TURNIPS.

Dear Sir,—As I find you do not exclude from your pages any information, however humble, on subjects connected with the study and practice of agriculture, allow me to lay before you a singular instance of partial failure in a field of turnips, which once came under my observation. This field was then in the hands of my friend and neighbour, Mr. Stamford, of Ditchingham, near Bungay. It may be necessary here to remark, that it is usual, in working our fallows intended for turnips, to cross-plough the land twice, in order to get the field perfectly level previous to stetching or ridging it up for the ensuing crop. Now the ridges or stetches of this field run north and south; but the failure in the turnip crop above mentioned extends *across*, not *lengthways* of the ridges, and consequently in the direction of the *warting*.

The following sketch may give a clearer idea than mere description can convey of my meaning, and of the present appearance of the field.

a, *b*, *c* } Ploughed beginning of May: good healthy plants.
d, *d*, *d* } Left unploughed from middle of May to beginning of June: a total failure of plant.



Now what has occasioned this failure? and on what principle can we account for the narrow strips of good healthy plants *across* the field at *a* and *b*, whilst those on each side of them have totally failed? An enquiry into the mode of culture will, perhaps, explain what at first sight appears rather mysterious. It seems that the field was *warted* or cross-ploughed for the first time about the middle of April; the wheat stubble having been first *turned* in, as we call it, i. e., ploughed, before winter. It was again *warted* the beginning of May. The whole field was stetched up for sowing about the beginning of June (being the *fourth* earth it had received); but in consequence of the long drought it was not sown till the 12th of July. The seed (Swedish) was put on *broadcast* in one day. The plants came to the hoe in about a month after; but for some time previous to hoeing a partial deficiency of plant was noticed. Mr. S. was for a while at a loss to account for so singular and *regular* a failure, until reminded by his men of a circumstance which had escaped his recollection. The part of the field No. 1 lies lower, and is consequently more liable to injury from wet than the upper part, No. 2. Having, therefore, finished cross-ploughing No. 1, he, knowing from the dryness of the soil that No. 2 could be ploughed at any time, took off his men and horses to some other work of more immediate importance; so that the whole of No. 2, *except a few furrows which had been ploughed* (marked *a* and *b*), lay for above a fortnight untilled. The deficiency of plant is therefore clearly attributable to this circumstance, because the whole of the remainder of the field, including the strips *a* and *b*, produced good healthy plants: but then occurs the question—How could this suspension of operations for two or three weeks occasion such extraordinary effects? The answer appears to be this:—The ground not being stirred during this interval, a multitude of grubs and wireworms were thereby suffered to hatch, which the plough would otherwise have destroyed; and these have doubtless eaten the plants. This idea appears to derive confirmation from the number of rooks which continued to alight on the bare spots; on removing the surface-earth of which, both grubs and wire-worms were found just buried beneath the mould.

Perhaps some of your readers better versed in these matters than I am, can give a more satisfactory solution of the above phenomenon. I merely state the facts, and endeavour to put the most reasonable interpretation on them in my power. If I am right, it would follow that it is not good to allow too long an interval between the spring ploughings; but I should be glad to know the opinion of entomologists on this subject.

In the mean time I remain, dear Sir, your's truly,

SAMUEL TAYLOR.

WHITTINGTON, Stoke Ferry,
March, 1844.

REPORT OF DR. VON MARTIUS ON GUANO.

[*From the Gardeners' Chronicle and Agricultural Gazette.*]

In answer to the summons of the general committee, I have the honour to submit the following report upon the nature of guano, upon its history, and also its utility as a manure in Bavaria. Guano is the excrement of various sea-birds, as the cormorants, flamingoes, cranes, &c., and is found on many little islands of the coast of Peru, situated between 13° and 21° south latitude. Its quantity is so great that it is obtained by means of mining operations. The word guano belongs to the old Peruvian, or Quichna language, and signifies muck, or dung. It is pronounced huanu by the Peruvians, which the Spaniards, according to the genius of their language, spell guano. This substance was known to the inhabitants of Peru as a valuable manure long before the possession of their country by the Spaniards; and the success of the culture of the barren sandy tracts of land along the coast depended in a great measure on the use of this substance, so favourable to vegetation.

The use of guano as a manure was first mentioned by Inca Garcilasso de la Vega, a Spaniard who wrote on Peru as early as 1723, in a work entitled "Commentarios Reales." "On the sea-coast," says he, "between Arequipa and Tarapaca, in a tract of land more than two leagues in length, they have no other kind of manure than that afforded by sea-birds, which dwell in countless numbers on the sea-coast. They lay their eggs on certain islands along the coast, and the quantity of excrement they leave there is astonishingly great. At a distance the masses of excrements look like the tops of a range of hills. At the time the Incas governed Peru the birds were preserved with great care. The punishment of death was decreed against those who landed on the island during breeding time, or frightened the birds, or at any time destroyed them. Each island was a distinct province, or, when large, was divided into several provinces, over each of which an overseer was appointed by the Incas, whose care it was to see that every district had its due proportion, and no one defrauded his neighbour of the universally needed manure.

Frezier, who travelled in Peru in 1712 to 1714, mentions having seen in the port of Arica, and in the island of Iquiqua, the guano dug up by negroes. About the same time Feuillé also speaks of the pestilential exhalations from the guano islands, and of the ships *(Guaneros)* employed along the coast for its exportation. Ulloa, also, later reported on it in his great work upon Peru. Alexander Von Humboldt was the first who brought specimens of guano to Europe, which was in 1804. He sent specimens for examination to Vauquelin, Fourcroy, and Klaproth,* and spoke of it himself in the following manner :—"The guano is deposited in layers 50 or 60 feet thick on the granite of many of the South Sea islands, off the coast of Peru. During 300 years the coast-birds have only deposited guano a few lines in thickness. This shows how great must have been the number of birds, and how many centuries must have passed over in order to form the present guano beds."

Humboldt put the question to Klaproth, as to whether the guano had been deposited on the present islands, or had been thrown up by some convulsion of nature. Although at first sight the simplest explanation appears to be that it was deposited by birds in its present position, yet an objection occurs from the fact that neighbouring islands present no guano. But this objection may be overruled by the well-known fact, that birds return always to the same places to nidify, and an analagous phenomenon takes place in those islands which are exclusively sought by turtles for the purpose of laying their eggs. But be this as it will, the guano exists in such quantities as to give it the importance of a geological formation, and in this respect is the counterpart of those formations which owe their existence to animals, as those formed by species of recent infusoria.

The guano layers, according to the length of time they have been deposited, have undergone many changes. Here and there they are covered with silicious sand, and have thus been protected from the influence of the weather. In other places, on the other hand, they are open and exposed to the action of light, air, and water, which have effected in them many decompositions. Such changes are indicated in most cases by an ochre-yellow guano, resembling Spanish snuff, the colour changing according to the greater or lesser amount of decomposition. Fresh guano is of a white colour, but that which is dug up has a bright or ochre-yellow, brown, or red colour. The chemical composition of guano is very various; and this point should be attended to where large quantities are bought, as some sorts are worth nothing like so much as others.

The first chemical analysis of guano was made by Fourcroy and Vauquelin, from the specimen brought home by Baron Von Humboldt.

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* For the results of the examinations of these chemists, see "Memoires de l'Institut," tom. vi; and Klaproth's "Beiträge," vol. vi.

These chemists found that it consisted of at least a fourth part of uric acid, which was in combination with ammonia. They also found oxalic acid in combination with ammonia and potassa, the phosphates of ammonia, of lime, and of potassa and ammonia, and a small quantity of a fatty matter. Soon after this analysis, Klaproth made his known; and then Völkel and Vertels published a very accurate quantitative analysis. It may not be uninteresting to give the results of these analyses:—

	Klaproth.	*Volkel.*	*Vertels.*
Urate of ammonia	16·	9·	3·244
Oxalate of ammonia	—	10·6	13·351
Oxalate of lime	12·75	7·	16·360
Phosphate of ammonia	—	6·	6·450
Phosphate of ammonia and magnesia	—	2·6	4·136
Sulphate of potash	—	5·	4·227
Sulphate of soda	—	3·8	1·119
Muriate of ammonia	—	4·2	6·5
Phosphate of lime	10·	14·3	9·940
Phosphate of soda	—	—	5·231
Muriate of soda	0·5	—	0·1
Alumina	—	—	0·104
Clay and sand	32·	4·7	—
A waxy resinous substance	—	—	0·6

These analyses show considerable difference; but this may be explained by the varying age, purity, and origin of the guano. It thus appears that among animal manures guano clearly claims the first position. It is uncommonly rich in ammoniacal salts, and these salts act very favourably on vegetation. They abstract from the air its carbonic acid, and it is through its means that those various proximate principles are formed, such as starch, mucus, resin, lignin, &c., which constitute the body of the plant. With the exception of the oxalate and the phosphate of lime, nearly all the salts are soluble in water. The urate of ammonia is not so; but then in the atmosphere it undergoes a decomposition, by which carbonate of ammonia is formed, which is equally soluble with the rest of the salts, and is taken up by plants, and contributes very much to their nutrition.

The ease with which these salts are decomposed by the air, and rendered partly volatile, will account for the fact that plants manured with guano generally present early in the morning accumulations of dew on the points of their leaves. The guano absorbs the surrounding air, and also the vapour of water that may be in it, which is especially serviceable to plants, and this is why guano is so valuable a manure in dry barren regions.

If we compare guano with other excrementitious manures, we shall find it far preferable to those afforded by man or the other mammalia, which do not generally contain more than 20 per cent of matter that can be appropriated by plants as food. It is thus five times better than night-soil, and it is also very superior to the so-called *Poudrette*, which, in the drying, loses, through putrefaction and evaporation, the greater proportion of its ammoniacal elements.

In birds the excretion both of the kidneys and intestines are contained in the cloaca, and thus it is that the volatile elements of the one get combined with the firmer elements of the other. The guano is also the better, from the circumstance of its being produced by sea-birds, which live entirely on fish, and eat no vegetable matter. The exposure also of the guano to the heat of a tropical sun, as soon as deposited, prevents the volatile elements from flying off, by the formation of a hard crust upon its surface. The manure of our dove-cotes suffers a considerable loss by its exposure to the air.

In its action on vegetation, and in its chemical composition, guano may be compared to the manure of dove-cotes. Davy found in fresh dove-cote manure twenty-three parts soluble in water, consisting of uric acid, urate of carbonate of ammonia and common salt; but in the dried manure only eight parts in the one hundred soluble. Sprengel analysed this manure, six months old, and found 16 per cent of soluble matter: there was very little uric acid, and a great deal of carbonate, sulphate, and urinate of ammonia, with some common salt and sulphate of potash. The eighty-four parts insoluble in water consisted of silicious sand, phosphate of lime and magnesia, and traces of alumina, iron, and oxide of manganese.

The proportion of soluble salts in the guano appears, from the two most recent analyses, to be much greater than in dove-cote manure. According to Klaproth they are only 16·5 per cent; but according to Völkel they are 39·22 per cent; and according to Vertels, 44·538. So that if the manuring power of guano be allowed to be in proportion to its soluble ingredients, it will be, in comparison to dove-cote manure, as 39 to 16 according to Völkel, and 44 to 16 according to Vertels. But we may very correctly estimate the manuring power of guano at a higher rate than its solubility, as the nature and combination of its salts are of importance; so that it would not be an over-estimate to say that the manuring power of guano is four times stronger than dove-cote manure.

These speculations are confirmed by practice. In Arequiqua, on the coast of Peru, if a field of potatoes or maize yielded an eighteen-fold produce with ordinary manure, it yielded, when guano was used, forty-five-fold of potatoes, and thirty-five-fold of maize. On the growth of grass, according to experiments made at Hamburgh, it has an extraordinarily favourable influence. An experiment was made at Flotbeck, near Hamburgh, on a piece of grass, which bore a second cutting five days after the first, whilst double the length of time was required on the ordinary method. For the speedy growth of grass on dry soils, and for the improvement of poor meadows, which are common near Hamburgh, it has been strongly recommended in the Transactions of the Prussian Horticultural Society.

In Peru three fanegas of guano, or about 714 French pounds, are laid upon a topo of land, which is about a Bavarian acre. In England 2 cwt. (centner) has been added to an acre for wheat, and 4 cwt. for potatoes and turnips. In England, on account of the facility and cheapness of transport, the guano seems to promise most. In Peru a fanega, or 238 French pounds, cost between three and five florins (from 5s. to 8s.) In Hamburgh it is sold at from 3½ to 5 rix-dollars (from 9s. to 14s.) per cwt., according to the quantity bought. In Germany the use of guano can only be recommended in Bavaria, where it is found to be cheaper than bone-dust or *Poudrette*. It is, however, very desirable that some of the rich possessors of land should try some experiments on the subject.

Guano recommends itself on account of its great concentration, and the facility with which it may be employed where heavier manures cannot be carried. It is very probable that many of the steep, stony, mountainous districts which possess at present little soil, but by further breaking down promise a rich vegetation as soon as they shall be brought into cultivation—such, for instance, as the steep ridges of hills in the Rhenish vine regions—would quickly repay the expense of manuring them with guano. But it must not be concealed that such culture in the first instance would require a considerable outlay of capital.

With respect to the peculiar nature of guano, from containing many volatile ingredients which are lost by immediate contact with the atmosphere, it should be remembered, 1st, that it proves less beneficial for manuring in winter than in spring; and 2nd, that it is used cheapest where it can be dissolved, and consequently where manure cannot be carried, yet where a spring of water exists, by which the guano may be dissolved, it may be used successfully.

In America the farmer often takes a small quantity of powdered guano, about as much as he can hold in his fingers, and places it in a shallow hole at the root of any plant to be manured, and then pours over it a small quantity of water. Guano cannot be recommended in those districts of Germany where the expense of carriage would counterbalance its advantages, or where water cannot be easily obtained. In the cultivation of gardens it promises much, as well for increasing the growth of grass on pleasure grounds.

MUNICH,
February 3, 1843.

NOTICES OF NEW PUBLICATIONS.

The Veterinarian to March. London: Longman & Co.

The Conductors of the above publication and other staunch professors of the veterinary art have now great cause to rejoice. Their labours on one great point are rewarded; for they have obtained a Royal Charter of Incorporation, and henceforth their art will take its rank amongst the incorporated professions.

This "glorious intelligence" did not arrive in time for comments in the March number of the Veterinarian, but it is there stated by the Conductors that their "feelings of joy and gratitude are truly deep, although not yet expressed." We, too, have frequently expressed our wishes for the advancement of the veterinary art, and on reading the above announcement, experienced the highest gratification. We therefore joyfully lend our aid in spreading the fact abroad, giving it verbatim from the Veterinarian:—

"We stop the press to announce that her most gracious Majesty the Queen has been pleased to grant to Thomas Turner, of 311, Regent Street, Middlesex, and of Croydon, Surrey; William Joseph Goodwin, of Queen's-mews, Pimlico; Thomas Mayer, of Newcastle-under-Lyme, Stafford; Wllliam Sewell, of the Royal Veterinary College, Camden Town; William Dick, of Edinburgh; Charles Spooner, of No. 1, Great College Street; and James Beard Simonds, of No. 9, College Street, London; and to such persons as now hold certificates of qualification from the Royal Veterinary College of London, or the Veterinary College of Edinburgh, and to such others as now are, or hereafter may become students of the same Colleges, or either of them, or of such other veterinary college, corporate or incorporate, as now is, or hereafter may be established for the purposes of education in veterinary surgery, whether in London or elsewhere in the United Kingdom, and which may hereafter be sanctioned by the royal sign manual in that behalf, and should pass such examination as might be required by the Royal College of Veterinary Surgeons—a *Royal Charter of Incorporation*—that they may henceforth be one body, politic and corporate, by the name and title of 'The Royal College of Veterinary Surgeons,' and that by that name they should have perpetual succession and a common seal, with full power and authority to alter, vary, break, and renew the same at their discretion, and by the same manner to sue and be sued, implead and be impleaded, and answer and be answered unto, in every court of her said Majesty, her heirs and successors, and be for ever able and capable in law to purchase, receive and possess, to them and their successors, any goods or chattels or other personal property whatsoever—and should have full power and authority to sell and dispose of any goods and chattels or other personal property, so to be by them acquired, and to act and do in all things relating to the said proposed body politic and corporate, as fully and effectually to all intents, constructions, and purposes whatsoever, as any other of her Majesty's subjects, or any other body politic and corporate, in the United Kingdom of Great Britain and Ireland, not being under any disability, might do in their respective concerns.

"That the veterinary art, as practised by the members of the said body politic and corporate, should henceforth be deemed and taken to be, and recognised as, a profession; and that the members of the body politic and corporate, *solely* and *exclusively* of *all other persons* whomsoever, shall be deemed and taken and recognised to be members of the said profession, or professors of the said art, and shall be individually known and distinguished by the name or title of 'Veterinary Surgeon.'

"The Charter contains many other provisions, which we hope to publish in full in our next number, with our remarks thereon. We can only add now our sincere congratulations on the successful termination of the labours of the committee, which will prove one of the greatest steps for the advancement of veterinary science ever accomplished in this or any other country."

We have not room for the report of the committee; we, however, hope it will be attentively perused by veterinarians; for it appears that the future expenses will be heavy, and though many have subscribed, numbers have not, and the latter are appealed to under considerations which should not be slighted. Let such, then, come quickly forward, and not suffer the cause to languish for their aid, for prospects are now opened to the veterinary profession, the benefits of which will be generally diffused; and it would betray a selfish feeling and an ungenerous spirit in any one who is able to contribute and will not, and who yet expects to participate as largely in such benefits as those who have put their shoulders to the wheel.

The Sporting Magazine to March. London: Pittman.

We always look for the appearance of this lively monthly with an interest that is rarely disappointed; because, whatever mood we be in at that time, we can always find something in its pages that is suitable, endurable, readable. If disposed for news, we have the best accounts of every seasonable sport; if more solidly inclined, we there find soundly written essays on every topic which a sportsman should be acquainted with; and if we be in the frivolous vein, the various adventures by "flood and field," and the original anecdotes with which they abound, supply a fund of amusement.

The pictorial embellishments are well kept up, and the Maps and Tables of the Hunts being still continued, add much value to the work. From the March number we extract the following receipt for

"STOPPING A TIGER.

"I must give you a slight description of an adventure I had with a tiger on this last trip, and my *miraculous* escape! By Jove! old fellow, had any betting men been there, they would at once have given the long odds all round that H. G. would never in this world receive another scratch of the pen from A. M. It occurred on the 25th of last month; so, to make a short business of it, here goes. Intelligence was sent in to me, that a tigress I had followed up for two or three days, having wounded her slightly in the leg before, was lying under a Burgut tree. Out I went about 12 o'clock in the day, some three miles from my camp. On arriving, I saw it was a case of close quarters, as the Shikaree and his men about him only made signs, and would not speak; and on quietly asking where my *friend* was hanging out, they pointed to a large tree, certainly not more than 25 yards off. I took my rifle and stood facing the tree, just on the the line of road my lady took on going out visiting: a sign was made: the men placed on the heights about commènced to shout and scream, and in one instant I heard the *purring* noise like a cat, but about a thousand times louder.

The Shikaree pressed my arm, and told me to take a very steady aim directly I saw her, as she was very ghussa (angry). Immediately after this she got up, and began walking up and down under the tree, as you see a tiger in a large cage, her tail lashing her sides, and sent at times slap over her back. All at once she saw me: rather stooped the fore part of her body, put back her ears as you see an angry cat, opened her mouth, gave three or four low growls, and showed me the whitest set of teeth I have ever yet seen without the use of tooth-powder. At this moment I levelled my gun and fired, struck her, and no sooner had the ball struck, than, with one of the most fearful roars I have ever heard, down she came upon me. Thank God! I was steady and cool, fired the second barrel, hit, but could not stop her. I had just time to get my second gun from my Aid, (that great man's son, who stood as steady as a rock, 'may his shadow increase!') when she was upon me. I fired the right barrel slap into her chest; but this was not enough for the infuriated brute: she got me down right on the broad of my back just as I was about pulling the left trigger: in her rage she turned a little, and just took my foot in her mouth: on feeling the pressure, I managed to twist it out like lightning; and then she was on me with one foot on each side of my chest. She then put down her head with that kind of growling noise, only much louder, with which a bull-terrier worries any kind of varmint, right over my throat and chest. In being thrown down, I had managed to keep hold of my gun, and on the brute stooping to worry me, I shoved it up in self-defence: she laid hold of it, shook it out of my hand like a straw, broke it into half a dozen pieces, and, in fact, expended all her rage upon it. The ball I had put into her chest began to tell; she reeled away from me about six yards, and dropped down *dead*. There was an escape for you! It was the secret wish of my heart to see a tiger charge slap up to me: I have seen it once, and now, so help me God, as a Christian, I never wish to see the thing again. I now am aware what a chance thing it is: I thought a man, if steady, could always stop one. The tiger before this had dropped with one ball dead; but you see this brute, although with a mortal wound of which she died, might, before doing so, have killed a dozen such as I. Had she mauled my throat instead of the gun I luckily had in my hand, I should have been a lost sheep! The fellows round about would not believe their eyes on coming to lift me up, as I was covered all over with the blood of the tiger, that I was unhurt. You never heard such 'Wah, Wahs,' in your life."

The Tree-Lifter; or a New Method of Transplanting Forest Trees. By Colonel George Greenwood. London: Longman & Co.

The gallant Colonel has produced a work of some novelty; and proved to the world, that the duties of a soldier's life have intermissions which can be turned to some account when there is a will to do so.

Time was, when it was considered necessary to cut a trench round a tree that was intended to be transplanted, removing the earth out of it, and also part of the earth off the roots between the trench and the trunk, substituting well pulverized soil, pressing the whole firmly down, and letting the tree remain two or three years before it was removed, "to concentrate the fibrous roots, by limiting their production to such ramose roots as can be removed with the tree." And, when the period arrived, the tree with the *whole* "of its roots, fibres, and rootlets, and also the green or external system of branches and buds entire and unbroken," was removed to its destination. The Colonel's practice is the very reverse of this, and so clearly described that it cannot be mistaken by any one who is conversant with the management of trees:—

"*Practical Part of Transplanting.*

"Choose a tree of from twenty to thirty feet in height, with several leaders, or with some unduly large branches. Prune the tree previously to digging round it, so as to take from the head at least as much as will, in all probability, be taken from the root, not by *cutting in* the head and branches of the tree, but by giving it a clear leader, and cutting out all branches large enough to compete with the stem, low enough to be reached by cattle, or the growth of which is vertical, or parallel to the stem. Cut all close to the stem. Dig a trench round the tree, at the distance of about twenty inches from it. Undermine the ball of earth, at the depth of about three feet, so that every root may be cut previous to lifting it. Tie some old carpeting or matting round the stem of the tree. Place the machine, without the shafts, on the planks, and block the wheels; the centre of the axle over the centre of the ball of earth, and the ring of the windlass rope at the foot of the tree. Place the chain with the round links horizontally, and loosely, round the lower part of the ball of earth. Cross the end held in the left hand twice over the end held in the right hand, and lay both ends down. Pass one of the other chains, as far as its middle, through the ring of the windlass rope. Pass the ends of this chain beneath the horizontal chain, and hook the ends back on the chain itself. Do the same with the four remaining chains. So that when the windlass is worked, these five vertical chains, being at equal distances from each other, shall bear an equal distress upon the weight of the ball. Fasten the horizontal chain, by hooking it to any convenient part of the vertical chains. Raise the ball of earth with the windlass, and place the ring of the windlass rope on the hook attached to the axle. The ball of earth carried thus is pressed together by the chains acting towards one another, and the greater the weight the greater the inward pressure. A ball of earth resting on a sledge or truck soon shakes to pieces on the least movement, besides the difficulty and mischief done in lifting it on and off the truck.

"The tree is lowered into the pit prepared for it with the same facility as it is raised. If it does not stand upright it is easily raised by the windlass, while earth is cast under where it is wanted. The unchaining is only reversing the enchaining. If during the carriage, owing to wet or the friability of the earth, the chains cut into the ball, and the load sinks, it is easy, by letting the load down altogether, to take up and tighten any one or every one of the chains.

"Place the upper surface of the ball of earth at precisely its former level, and do not cover it; but raise a ridge of earth round the outside of its circumference, so as to form a *pan or irrigation cup.* Tie some bushes round the stem to prevent cattle from rubbing it. The organization of the bark is easily destroyed by any bruise, or by cattle rubbing against it. It is the common error to believe that the bark is *poisoned* by the oil from the skin of cattle,

"It may be found necessary to stay the sway of the tree while in movement, by ropes from the stem to the shafts.

"Among the advantages of transplanting with the 'Tree-lifter' may be reckoned its cheapness. Its simplicity is such that the whole may be performed, and even single-handed, by a common day labourer. One man man may plant one tree per day, of from twenty-five to thirty feet in height. To transplant trees without the ball of earth requires great care, labour, and expense in tracing out the small fibres of the roots, which after all are nearly valueless. All transplanted trees are the better for being watered; but with the ball of earth this is by no means necessary. To transplant without the ball of earth, and not to water, for at least two summers, is hopeless. This is a great expense, besides staking, and tying, which plants with the ball of earth do not need. The growth of trees transplanted with the ball of earth is not checked;

but without a ball of earth, trees transplanted with whatever care, or at whatever expense, are checked in their growth for eight or ten years, and if they do not die, they become living scarecrows.

"Over the nursery plant, as a single tree, the transplanted tree has the advantage of a start of from twenty-five to thirty years, besides saving the expense of the material, and carpenters' work, for at least two fences for each tree.

"The system recommended would have peculiar advantages for planting avenues."

At page 60 we have the following addititional remarks on transplanting, as to the most suitable season for that operation :—

"As the roots of trees grow in length through the earth they are in perfect contact with it, and as they increase each year in girthing or diameter this contact is continued, and the pressure against the earth even increased. I imagine that this close contact of the roots with the earth is very essential for the absorption of moisture; and that when a ball of earth is taken up with a transplanted tree, the parts of the roots contained in the ball are infinitely more efficient for the supply of sap than five times their length of root not in perfect contact with the earth. But certain it is, that, by taking a large ball of earth, with 'the tree-lifter,' I have transplanted trees of about twenty-five feet in height in *every* month in the year, without a single failure, and without the plant feeling its removal so much as a greenhouse plant does potting, that is, without a single leaf drooping, even in the hottest days of June, July, and August, though the plant was unwatered, and with the same growth on the tree, in the next and following years, as on those on the plantation from which it was taken.

"I consider, however, that the worst time to transplant a tree is when it is shooting; the best time as soon as possible after it has shot; that is, as soon as it has formed its winter bud. This will differ in different trees. Some are fit to transplant in June, or even in May. The best months for transplanting the generality of English trees with the ball of earth, are July, August, and September; for though the upward growth has then ceased, the growth in diameter, and the downward growth, that is, the elongation of the roots, is in the fullest tide."

His directions for rearing the deodara cedar and the auracaria imbricata as single trees in parks, &c., are thus given :—

"In the present rage for pinuses, I should like to say a word in recommendation of the deodara cedar and of the araucaria imbricata. They are both perfectly hardy. The deodara is from the Himalaya mountains. It attains the largest growth, and is perhaps the most exquisitely graceful of all traces. With us its growth appears to be about twice as quick as the common cedar in the same soils. The auricaria is the only hardy timber tree we have of a really tropical character. It is from the Andes, and attains an enormous size. Like pinuses, these trees should be planted out early, when they are from six inches to a foot high. The best way to rear them as single trees in parks, &c., is to trench a pit of five feet in diameter; to put a triangular fence round them of about four feet high, made of poles, the thinnings of plantations, driven into the loose ground so close one to the other as to prevent sheep browsing the plant, splayed outward, bound together with bars at the top, and with cross bars over the top. This is not only hare proof and cattle proof, but man proof, wind proof, and frost proof; and it does not give a greater degree of shelter to the plant than is necessary to one of that size. When the head of the plant emerges from its fence, place a single hexagonal post and rail round it, to keep off horses and cattle, but under which sheep can pass. It is true that these close fences discourage the free growth of the lower side branches; but it must be recollected that these branches must be eventually be taken off, on account of the cattle. This should be done gradually. And when the branches are out of the reach of sheep, the inner fence may be removed, and the stem bushed. The side branches above the inner fence must also be taken off by degrees. But the plant should not be shrived up to '*the browsing line*' till it is three times as high as that line. The outer fence may then be removed, but the stem kept bushed. If the side branches are taken off by degrees, the sap which would have supplied them increases the growth and vigour of the remaining head; but if they are too suddenly removed, the plant will break out all over, or it will be starved, from want of head to elaborate the sap and return it to the root. With the exception of one at Kew Gardens, Dropmore, the planter's Athens, has the earliest auricaria planted in England, and I believe it has the first deodora."

It is not our intention to follow the Colonel through his examinations of the theories of other physiologists, or even to lay any stress upon his own speculations; for at the close of the work, he recommends the practice of transplanting "with the ball of earth, *without reference to the* *theories with which it has been supported.* Indeed with regard to them," he observes, "I do not believe that in all vegetable physiology or agricultural chemistry *there is one principle to be depended on.*"

To this we say, that if such be his belief, he might have spared himself the trouble of controverting the theories of others or of attempting to establish his own, as the above conclusion throws an air of ridicule over that portion of his labours.

Notwithstanding this the work contains much that is useful for those who have the management of trees. The author has sojourned in many countries, and being a shrewd and careful observer of nature, has gleaned much valuable knowledge. A neat tinted lithographic plate is prefixed to the book, delineating the "tree-lifter" and other implements used in transplanting, and the directions for using them are exceedingly simple and plain.

The Journal of the Royal Agricultural Society of England. Vol. 4, part 2.
London: John Murray.

The peculiarly favourable circumstances under which this Journal is published place it at the head of English agricultural literature; and, accordingly, its contents are of a nature to satisfy any reasonable doubter of the capabilities of English agriculturists. So long as the Quarterly Journal of Agriculture had no southern rival published as it is, and backed by a powerful society, many of our northern brethren assumed that the agriculture of England was inferior to that of Scotland. This, however, was a delusion; and though the creation and subsequent proceedings of the Royal Society ought to have dispelled it, we are sorry to find that an uncharitable spirit of nationality even now prevents it from being acknowledged.

The part before us commences well with a paper by Mr. Pusey on the Agricultural Improvements of Lincolnshire, for which we thank him; and we should be still further gratified if his visits were extended to the other counties of England, and given to the world through the same medium.

Mr. Pusey visited Lincolnshire for the purpose of ascertaining the state of its agriculture, as it was the wish of the president that an enquiry should be made into the present state of farming in each county; "and in order," Mr. Pusey observes, "to be assured of not having ignorantly over-estimated the excellence of Lincolnshire farming, I have carefully examined, during the last autumn, Northumberland and the south of Scotland."

His first impressions of Lincolnshire were of the most agreeable kind—

> "On a sunny morning in November, 1842, Mr. Handley having undertaken to show me Lincolnshire farming, we passed through Sleaford on our road to Lincoln, and soon entered upon a high but level tract, presenting a cultivated exuberance such as I had never seen before. Farm succeeded farm, each appearing to be cultivated by the owner for example—not, as was really the case, by a tenant for profit; and so for miles we passed on through fields of turnips without a blank or a weed, on which thousands after thousands of long-woolled sheep were feeding in netted folds; and so large as well as regular were the turnips in the narrow rows, that the lower halves which remained in the ground, when the upper part had been consumed, seemed to pave these sheep-folds. Every stubble-field was clean and bright; all the hedges kept low, and neatly trimmed; every farm-house well built, with spacious courts, and surrounded by such rows of high, long, saddle-backed ricks, as showed that the land did not forget to return in August what it had received from the fold in December, since the number of these farm-houses, which might always be seen at one view, proved that the size of the farms would not account for the extent of the rick-yards. Yet this land, so loaded with roots and with corn, showed no mark of natural fertility. On the contrary, it is a fawn-coloured sand about 6 inches deep, lying on a dry, thirsty, walling-stone."

This was a good beginning. A little further on they pass Dunston Pillar, on what still retains the name of Lincoln *Heath*, although it "is now converted into a pattern of farming."

> "Passing Dunston Pillar, the road continues due north for 4 miles along the level hill-top, through the same beautiful farms, until it dips to cross the narrow breach or valley in which Lincoln city is placed, and through which the western streams find their way to the sea, but immediately rising, passes by the lofty cathedral through a Roman arch, and stretches along the ancient Roman way (Ermine Street) for nearly 20 miles, in a perfectly straight line northwards, upon North Lincoln Heath, over the same shallow sandy soil, but among the same neat enclosures, heavy turnip crops, numerous flocks, spacious farm-buildings,

surrounded by the same lofty and crowded corn-ricks. Thus, in travelling due north for 40 miles from Sleaford to Brigg, you traverse the raised platform of the South and North Heath, as may be seen by reference to Arthur Young's map;* and during the whole time you pass through the best farming upon very moderate land, recently enclosed, as the fences themselves show; and, what struck me particularly, you not only see generally very high farming, but *you see in forty miles hardly any bad farming*—scarcely two or three slovenly fields. The standard of cultivation is evidently very high, and to raise this standard is of course the great means of improving the farming of any district."

He then contrasts the farming of Lincolnshire, Buckinghamshire, and North Devon, with that of Northumberland and East Lothian, giving the palm to the southern counties. The remainder of his interesting paper is devoted to the details "of the various modes of management by which that excellence has been attained," and from which it is our intention to make a few selections.

Speaking of the drainage of the Fens, our author notices a singular method of embanking but recently practised in that part of the country, which ought to be known everywhere.

"But another field of improvement has been entered on, which, if carried to its full extent, will render embankment unnecessary, and also pumping, whether by wind or by steam, keeping the rivers always below the level of the adjacent lands—the improvement of their outfalls into the sea. All these fen-rivers fall into the great bay called the Wash, shallow and full of shifting mud-banks, through which at low tide they wind their shifting course into deep water. At the mouth of Welland this difficulty will be overcome by carrying the river itself out to sea. Here, as Dr. Buckland informs me, no wall is built, but two rows of bush-faggots are laid for perhaps 50 yards in advance on the mud at low water on each side of the mouth. After a few tides these faggot-heaps are found full of substance called warp, a mixture of fine sand and mud, which render them in some degree solid. Another tier of faggots is then laid upon the first, and is again embodied with them by the warp. Thus the growing embankment at last rises above high-water level, and the Welland, being now confined by its new banks, digs itself a new channel through the yielding bottom. A fresh advance of faggots is then made, and a similar addition to the double embankment ensues. In this way has the engineer advanced three miles into the sea, compelling the waves to cement the frail materials of their own subjugation, and by these means all the rivers of the Great Wash might be carried forward to a common outfall, so that the fen district would acquire a perfect and natural drainage. Nor is the benefit of these outfalls confined to drainage and navigation, for when the new river-banks are completed they are connected with the shore by cross embankments, and the portions of sea thus cut off are gradually filled up by warp, and become excellent land."

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* An engraving of Young's Map accompanies and gives additional value to Mr. Pusey's paper.

Another practice seems to be peculiar to that quarter :—

" But before leaving the neighboured of Axholme I must mention the practice of warping, known in no other part of the world. We have seen that in the southern part of the county the sea casts down a fine mud or silt, which obstructs the mouths of the rivers, and fills up any shallows that are partially enclosed from the waves. The Humber, where it mixes with the sea, contains in dry seasons so much of this silt or warp, that if a glass tube be filled with it to the height of 15 inches, an inch of sediment, we are told, may sometimes be seen at the bottom. About seventy years ago it occurred to a landowner at Rawcliffe, that if this water was laid upon his land the sediment would be secured; and his success established the system, of which I saw an example near Axholme. The water is brought up from the Humber by a canal, chiefly made for the purpose, the level of which at high tide is much above the adjoining land. Two adjoining fields, of perhaps 50 acres, had been surrounded by a temporary bank about six feet high, which confined the water when admitted from the canal by a cut through its side. The tide, when I saw these fields, was retiring, and they had the appearance of a muddy harbour covered partly with water, partly with slime, but in part showing the original herbage which was not yet buried. This marine appearance was striking in an inland field, 10 miles distant from the upper end of the Humber; still it was only the commencement of the operation, for the object of warping is not to improve the existing soil by a slight covering of mud, but to create an entirely new soil. As Mr. Young observes,—

" 'What the land is, intended to be warped, is not of the smallest consequence—a bog, clay, sand, or a barn floor, all one—as the warp raises it in one summer from 6 to 16 inches thick, and in hollows or low places 2, 3, or 4 feet, so as to leave the whole piece level. Thus a soil of any depth you please is formed, which consists of mud of vast fertility, though containing not much besides sand, but a sand unique.' "

" The owners of the canal charged in this case £15 per acre for the use of the water, but the benefit corresponds with the price; for this new soil will sometimes bear wheat and beans alternately, with an occasional naked fallow, for twelve or thirteen years without any manure; and the crop, Mr. Young says, should be 30 or 36 bushels of wheat, 60 of beans. An acre was once measured to produce 99 bushels of beans. Yet, even for such an improvement, there is great enterprise in the landowner who expends £15 per acre; and great confidence in that landowner's spirit must also have been entertained by the adventurers who risked their capital on a canal with the hope of selling the water, or rather the future land, at such a price. This practice is now imitated in the same neighbourhood, by a process which, until it was shown me by Mr. Childers, I could not believe to be practicable. The site is over the borders in Yorkshire, but the operation ought to be put on our Society's records. Mr. Gossip having purchased, about Hatfield Chase, 4000 acres of worthless, deep, quaking bog, devoid of any mineral matter, for a trifling sum, found that near it, in the bed of a river which had been abandoned when a straight cut was made for draining the level, he possessed a deep and extensive bed of warp with which the deserted water-course had been silted up during the temporary return of the waters when the works were destroyed; and he conceived the plan of spreading this deposit over his barren waste. On visiting the spot we found a quarry of several acres excavated to the depth of 30 feet in the bed of warp—the loaded earth-wagons being drawn up an inclined plane by a steam-engine fixed at the quarry's mouth, travelling thence along a railroad over the moor, and depositing their loads, in a regular coat 8 inches deep, upon its surface. When they had thus covered the bog on each side of the railway, as far as it reached, an enormous but manageable machine proceeds to the extremity, takes up each piece of the railway as an elephant might with his trunk, and deposits them in a fresh line upon the uncovered morass. Thus you see the thick sheet of firm and fruitful soil steadily spreading over the hopeless quagmire; and you pass, at a single step, from the Bog of Allen to the Vale of Aylesbury or of Whitehorse; for you not only see oats sown in March upon land made in February, but beans, the surest sign of a good staple, upon the new soil of the former year.

" The expense is about £15 per acre, the first cost of the land was £3; and it is now well worth 25s. to rent. This is not, however, an example which can be followed; for scarcely could such a mine of soil, capable of supporting vegetation at once, be worked elsewhere to such a depth, though Mr. Everett informed me of one such deposit found in the United States. Nor, indeed, could water-warping itself be generally adopted, though along the banks of the Trent, Air, Dun, and other streams of the Humber, it has been followed up with great spirit since Mr. Young's time, to the extent of 50,000 acres, if I am rightly informed; and the tide has been thus set to work upon land near Gainsborough, which is 20 miles up the Trent, and 60 miles distant from the open sea."

An opinion on leases is given :—

"And here, though I would by no means argue against the granting of leases, but think, on the contrary, that when a tenant is ready to sink his money upon a farm, he is entitled to that security, if he desire it, I must state in fairness that this large sum of £8 per acre, or £8000 on a farm of 1000 acres, has been expended on the farms at Brocklesby (according to the practice of Lincolnshire) only through well-merited confidence in the owner: and I must also mention, that whereas in East Lothian, where leases run in general for nineteen years, the lease and the tenancy are often ended together; here, on the other hand, the farm, though on a yearly tenure, passes, almost as a matter of course, from father to son; in one case, when a farmer dying left a son three years old only, two neighbouring tenants undertook, and were allowed by the landlord, to manage the farm for the infant, in trust until his majority. Nor has the spirited outlay on the part of the farmers been without its return. The parish of Limber, 4000 acres, was formerly let to four tenants, at £125 each, or 2s. 6d. an acre, and all four became bankrupts. It has been enclosed, is now well farmed, excepting what has been planted, and at the present rent the tenants are doing well. In some instances considerable fortunes even have been made. I may cite the case of Mr. R. Dawson, well known in the county, who occupied the entire parish of Withcall, 2600 acres of ploughed ground, with one barn at the homestead. He was one of the first who ventured a heavy outlay upon this land: his yearly bill for bones alone was from £1500 to £1800. A friend, who staid at his house for three days about 1835, tells me that he thought Mr. Dawson's management the perfection of farming; and you might see a single field of 350 acres in turnips. He died a few years since, and left a large fortune."

The Lincolnshire method of converting the straw into dung is deserving of more general adoption :—

"In the eastern counties the beasts receive turnips drawn from the land, and in the Lothians are fed mainly on turnips, which in the North growing more slowly are more nutritious than in the South. But on the light lands of Lincolnshire the farmers say that their weak soil cannot spare the turnips—that is, cannot spare the manure which the sheep would make from those roots upon the land where they grow. Instead, therefore, of drawing home their turnips, they purchase large quantities of oil-cake (80 tons perhaps, upon a large farm costing £600), by the aid of which their beasts thrive on the straw, and the manure is at the same time enriched. This peculiar practice appears to me so important that I inquired into its details. The cattle are bought in November, and kept loose in separate yards, 10 or 15 together; and such is the abundance of straw, that I have seen a gate hung between two of these yards nearly three feet high, that it might have room for opening at the close of the winter. The number of beasts thus wintered upon a farm of 1000 acres varies from 70 to 100, or more. There are two kinds of beasts purchased, and hence two kinds of management. Generally young beasts, two year olds, are bought in for about £8 a head—no small outlay of capital in addition to the ordinary stock of a farm; and, without of course attempting to fatten them, the farmers give to each about four pounds of linseed cake daily. They are thus kept growing, perhaps slightly improving, through the winter; and when they are sold in the spring, the increase in their value is expected just to clear the cost of the cake they have eaten, though it has been also stated to me that if the beasts repay half the cake they have eaten the farmer still thinks himself well rewarded. Another method is to buy in three-year-old beasts, to give them first eight pounds, then twelve pounds, at last as much as sixteen pounds daily; so that when these beasts are sold out in the spring, also, they are three-quarters fat, and ready to be finished elsewhere at grass. These, however, like the others, only pay I suppose at most the bill for oil-cake, and are, what the Lincolnshire farmers call them, machines for converting the straw into dung. But it is oil-cake dung, not the litter trampled by a few horses or pigs, and turned by the rains into the semblance of dung, which we frequently see in the South: and as the third horse is cast off from the plough upon our light land, southern dung, if it can so be called, will become weaker. We feed our sheep, indeed, sometimes more rapidly, and so recompense our land in some degree; but in the manufacture of dung I must admit that we are distanced. It also strikes me that this Lincolnshire process might be applied to a kind of soil for which so little new help has yet been struck out; I mean the cold, heavy, almost hopeless, clays. Drain them as we may, there are many tracts of such land on which roots cannot be grown; or if roots be forced to grow, the injury done to the land if folded by sheep, or by carting the roots away, more than counterbalances the advantage, as Mr. Handley informs me that he and other farmers have found by experience. How then is good dung to be made upon such a farm? I should say by transferring to it the Lincolnshire method. It is true that the straw is usually short and thin on such land; but I do think, and I hope that the suggestion will not appear theoretical, that if on such a farm after draining and dressing it with burnt clay, the bulk of straw were increased, by applying guano, for instance, to the oat crop;* and if that straw thus increased were used by cattle with oil cake,† a new face might be given to its cultivation. The method would then be equally important for soil which is so light that the turnips grown on it cannot be drawn without weakening the succeeding crop, and for land which is so heavy that turnips cannot be grown on it, or, if grown, cannot be removed without trampling it into a state of clay. There is no doubt, at all events, that the practice answers upon the wolds, where a farmer would as little think of holding his farm without sheep on his turnips as without beasts in his yard."

Heavy swing ploughs are used in Lincolnshire, drawn by two horses, and on heavy land by three; and the wagons "are very ponderous masses of timber." Fixed steam-engines seem not to be in use there, and Mr. Pusey thinks it would be advantageous for every large farm to have one. On the subject of large-sized fields, with well-clipped hedges, we find that—

"* It is proposed to apply the guano to the oat rather than to the wheat-crop, because the slightest excess of stimulating manure applied to wheat brings the risk of mildew. Where guano has been drilled with wheat on a cold clay I have seen injury produced to the crop on the crown of the ridge, while the effect near the furrow was good. On the same farm the tenant had used guano with advantage on wheat by handsowing it in March on the parts near the furrow, and afterwards hoeing it in. The result of the guano so applied was very favourable.

"† I do not mean that cattle so wintered must necessarily be kept on oil-cake. There is no doubt that the farmer might use spring-corn grown upon his own fields. Mr. Graburn informs me that the oil-cake imported into and produced last year at Hull amounted to more than 30,000 tons, which must have cost the farmers of Yorkshire, Lincolnshire, and Nottinghamshire, as much as 160,000 quarters of barley."

"The face of their fields shows that their minds have not been closed to inquiry. They have one advantage indeed in those fields which must not be passed over—their size, I mean—which varies from 30 to 50 acres, and their clipped hedges uninjured by trees—an advantage which will be felt by farmers from the west side of England, whose 4 or 5 acre fields are half over-shadowed by trees. One farmer indeed in Devonshire lately grew, I was assured, 100 acres of wheat in fifty different fields. The profit of the trees that grow in these fences cannot compensate for the land which they injure. I have seen turnip-fields in which one-third of the crop has been spoiled by the hedgerow timber, partly through the dripping from the leaves, but in great part by the roots, whose fine threads shoot up among the turnips in the freshly-ploughed ground, and sometimes clog the harrows in the following spring. It is clear that, though the landlord's trees may be permitted to stretch their roots through his own land, when that land, poor and starved, is left on the old system of farming to its own natural efforts, they cannot be entitled to forage upon manure bought at a heavy expense by the tenant; and though the forest-like appearance of such small wooded enclosures is very beautiful, still, were the fences removed,* one-fourth might often be gained to the land, while a few trees spared give to the open farm the appearance of an arable park. In Lincolnshire, however, perhaps the opposite fault of too bare ex-

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"* The improvement which may be produced by the removal of old fences is described in the following statement by Mr. Keeling, a Staffordshire farmer:—

"At the request of Lord Hatherton I send you the measurement of the two large fields at Yew-Tree Farm. The Turnip-field is 65 acres; it was, two years back, at the time I entered upon the farm, in eight enclosures: I have taken up 1914 yards of fences, and intend dividing it into three fields; it will take 800 yards of new fence. The field in which I was subsoiling is 42 acres; it was in six enclosures. I took up 1264 yards of fences; if I divide this field it will take three hundred yards of new fence. The land Lord Hatherton mentioned on my Deanery Farm was originally in 27 enclosures, 91 acres. I took up 4427 yards of fences; it will now lie in five fields, and will take 1016 yards of new fence, a part of which are planted.

"I really cannot say what land is gained by the different operations, but some of the fences were from three to four yards or more wide, that the plough never touched; my new fences are upon the level without ditches: in the whole of the old fences there were a great number of ash-trees which are all stocked up, as well as a good part of the oak, only leaving a few for ornament and shelter. I think the greatest gain in land will be from getting rid of the trees.—*Conyer, Nov. 30th*, 1843.

"Mr. Keeling, it will be remarked, after the extensive clearance by which he has thrown twenty-seven fields into one field of 92 acres, subdivides it again into five fields. My own tenants do not generally wish to have more than one ploughed field on a farm. Ph. P."

posure should be corrected by the plantation of screens, and the piercing winds of winter and spring be thus mitigated."

Mr. Pusey then enters into an enquiry how far the Lincolnshire methods of light farming are applicable to other counties, recommending the cultivation of extensive heaths in England and Scotland, and showing the details of such improvements. He also gives his opinion of enclosures injuring the poor:—

"Enclosures, it is said, injure the poor. Now Lincolnshire is one new enclosure from Cambridgeshire up to the Humber; yet I know no county in which the labourer is better provided for. His wages vary from 10*s*. to 12*s*. and 15*s*. a-week: he obtains a great deal of task-work,* for more labour is thus paid here than elsewhere—filling dung-carts, for instance, at 2d. per load, and the harvest-wagon at 1s. per acre, which diffuses activity through the whole operation. Good hands are at this moment earning at task-work from 15s. to 18s. weekly. His cottage—unlike the hovels of Northumberland and of Scotland, where one room on the ground holds the family, however numerous, by day and by night— is neat and cheerful. Many labourers have allotments, and some even cows. So far from injury accruing to the labourer by enclosures, it is clear in theory, as it as proved by the practical contrast of Lincolnshire with Dorsetshire, or of Derbyshire with South Wales, that where the demand for labour is stationary, wages must be low, but that they will be raised wherever the plough breaks up new fields of employment. The Lincolnshire labourer living among new enclosures is well paid, clothed, lodged, and also, I should mention, well fed, sometimes with fresh meat. The consequence is that being better fed they are able to work harder than other labourers; and thus the farmers are repaid for their expenditure upon their men as well as upon their land.

"* The following remark is from a Lincolnshire agriculturist:—Whether 'task' work be more in practice in Lincolnshire than elsewhere I, from my retired habits, know not, but it is a practice highly beneficial both to the farmer and labourer; the one gets infinitely more work done, and the other more wages and better habits; for instance, in filling the carts with manure by the day the labourer seldom fills more than 8 or 9 loads, whereas for days together, this year, I had 160 loads of manure, each load 1¾ cubic yards, filled by 10 labourers, at 1¾d. per load, and spread upon the fallows with 9 carts, 9 horses, and 9 of my own men, and generally finished by 2, never later than 3 P.M.; sharp work of course, but the labourers push everything else on, no creeping, and they thus earn 2s. 4d. a day, and have ample time to do a little work in their own gardens in the evening.

DRAINAGE.

Under this head we have several papers: the first a prize essay on Draining, by Mr. Thomas Arkell, entitled to much consideration by those who require such information; in which every detail is given, with a notice of the past and present practice of draining in England, and the various districts in the country which require the most extensive efforts in under-draining. Mr. Parkes, consulting engineer to the society, has also contributed a Report on Drain Tiles and Drainage, furnishing most desirable information. From this report we learn that the Tweeddale tiles and soles are two guineas a thousand, and £1 15s. 4d. per 1000 feet; the Etheredge tiles and soles and tiles and covers 30s. per thousand, and £1 5s. 3d. per 1000 feet; and Read's pipe tile, varying in thickness from 0·40 in. to 0·25 in., and in diameter from 2·25 in. to 1 inch, are for the former £1 18s. per 1000 and per 1000 feet, and for the latter one guinea per 1000 and per 1000 feet. The internal dimensions of the Tweeddale tile are 2¾ in. by 2¾ in.; Etheredge's from 2½ in. by 1½ in. to 1½ in. by 1½ in.; while Read's largest tile-pipes are only 2·25 inches bore, and the smallest *one* inch.

The pipe-tiles seem to have been invented by Mr. Read about 35 years ago, when he was farm-servant to the late Rev. Dr. Marriott, of Horsemonden, Kent, on whose farm they were first used, being then made 3 inches in diameter. As it was found difficult at that time to effect a perfect union between the two faces of the clay, a narrow slit was left the whole length of the tile; but now they are made perfectly cylindrical.

It may seem rather astonishing to those who have been accustomed to use the largest draining tiles, to find pipe-tiles only one inch in diameter recommended as being fully efficient; but so satisfied are the Kentish farmers, that they have established ten pipe-tileries in different districts, from which 1,000,000 feet of tiles have been already produced. With regard to their efficacy, Mr. John Taylor, of Brewer's Hall, Mereworth, Kent, observes, "I have used them in drains over 40 rods long, and never saw one pipe (1½ inch bore) more than *two-thirds* full of water. Within half an hour after heavy rain commences these drains run fast, and in a few hours after its cessation they run but slowly, consequently a large and expensive tile is useless where a much smaller and cheaper one will do the same work." The smallness of the bore of the pipe-tiles has other advantages over the larger tiles, in the first place, they are considerably lighter, which will save something in the carriage, and neither rabbits, moles, or rats can enter them: the roots of moisture-loving trees must, however, be guarded against, for Mr. Thomas Hammond, of Penshurst, observed the roots of a water willow penetrate a rod up a drain!

The cost of draining clays and firm-bottomed soils unencumbered with stones by the pipe-tiles, at from 30 to 36 inches in depth, and a mean of about 20 feet between the drains does not exceed £3.

The third paper is by Mr. Robert Beart, on the Proper Materials for filling up Drains, and the Mode in which Water enters them; and details the result of his experience and observations in draining 3 to 400 acres of cold clay land. The different processes by which he effected his object are minutely and satisfactorily described; and no farmer need go blindly to work, when such essays as we have just noticed are within his reach.

Mr. Beart concludes with a summary of the expense of draining an acre of land in Huntingdonshire, with parallel drains 21 feet asunder, with tiles, wood, peat, turf or wedge, and block draining. The length of such drains, deducting head-lands, will average 680 yards, and the expenses may be thus stated:—

	£	s.	d.
Tile Draining	5	5	10
Wood Ditto	3	4	4
Peat Ditto	3	0	2
Turf or Wedge Ditto	1	16	0
Block Ditto	1	16	0

Our limits prevent us from going through the contents of this part of the Journal as we could wish. We cannot however close our imperfect notice of it without expressing our opinion that such a publication, circulating so extensively throughout the kingdom and diffusing important information on every branch of agriculture, must produce the most beneficial results; furnishing the most perfect collection of agricultural experience ever yet offered; and which undoubtedly will most essentially contribute to the maintenance of the husbandry of this country in that position which it must be every Briton's pride to behold.

AGRICULTURAL SUGGESTIONS.

Sir,—I communicated some hints to you in a former letter on the subject of carrying sand to improve clay land. I then thought the advantages to be obtained would be from its acting mechanically; and that possibly, by filling with it very narrow gutters made by the plough, it might contribute to keep the surface dry. I have since been led to view it in another light, from seeing the iron hoops of a beer cask very much corroded; and it occurred to me, that it must arise from the sand which was put to stop up the bung-hole containing salt, as it probably had been drifted from the sea. Now I believe salt is a grand element of vegetation: then surely, when we see ships sent to America and Africa for manure, it will not be thought extravagant that I should think that it might be worth the cost to make railroads in some parts of the country, for carrying sand and other marine deposits from the coast for manure.

Another hint I beg to propose—Could not sea water, where it might be had on easy terms, be filtered repeatedly through beds of sand, and by that means be made to communicate much salt to the heap; then by mixing lime with it a powerful fertilizer most likely would be produced; as I see in Johnson and Shaw's Farmer's Almanac, that different chemical combinations are formed by a mixture of salt and lime, and which seems to be a favourite compound for improving land.

I have been told that honey made in the inland parts of the country is not so good as that made near the coast; which is attributed to there not being the same supply of salt there. May it not be inferred from that, that the further inland the sand impregnated with salt were carried the more powerfully it might act as a fertilizer?

You inserted a letter of mine on the defects of the law respecting roads, bridges, &c. I have since been made acquainted with an illustration of some of the effects arising therefrom. A poor woman who held a small farm told me she had had a poor year; for she had been obliged to pay rates towards building a bridge. It was a bridge that had been built at the expense of two parishes in the Hills, which, I believe are not very rich; notwithstanding, as the law is, the money must be raised from the occupying tenants of the farms, whether they have leases or are to enter upon other farms the next year in an adjoining county. All this might have been necessary in less improved times, but now, is it not barbarous? for the rule plainly should be, in providing bridges, asylums, schools, public tanks, wells, &c., when those who succeed us are to be benefited as well as ourselves, that the money should be borrowed, on such terms that the principal would be redeemed by the time it was wanted again.

Doubtless cattle must suffer much in various parts of the country, in summer, from want of water, as many farms are not as well off in that respect as they might be. The manner water-pools are made in the country admits the cattle to walk into them, which certainly does not improve the water. Is not the plan adopted by the great cow-keepers near London an improvement on that, by having tanks, and pumping the water out of them into troughs for their stock? And, besides, are not tanks made at much less expense than the common horse-pools? This is a part of rural economy that is possibly worth enquiring into; and should the Royal Agricultural Society of England set up an experimental farm, I beg to call their attention to it.

I have the mortification yearly of seeing the birds destroy quantities of gooseberries and currants. Now I find that wide linen and calico are sold at sixpence a yard: had you influence with our manufacturers to get them to weave in the same length and breadth the one-twelfth the weft and warp, which likely might be sold for two-pence a yard, it would, I think, be a great aid in keeping away the feathered plunderers.

I am, Sir, your obedient servant,

CADOGAN WILLIAMS.

BRIDGEND,
March 19, 1844.

PREPARATION OF STIFF LAND FOR TURNIPS.

By Mr. ALEXANDER ROSS, Farm Overseer, N. Berwick Abbey.

Every agriculturist is aware of the difficulty, and, in some seasons, of the utter impossibility, of reducing strong adhesive clay soils to a state fit for sowing turnips. A field on this farm, allotted for turnips for the present season, is exactly of the description of soil here referred to, and with a view of surmounting the difficulty experienced in preparing such a soil, Mr. Richardson directed that it should undergo a thorough autumn tillage. It was accordingly ploughed from stubble betwixt the 3d and 7th of October. Betwixt the 10th and 13th of the same month the drills were opened and farm-yard dung driven from the close applied to it at the rate of 18 tons per Scotch acre, and the whole covered up. In this state it lay till the usual period of sowing in May, when the whole was found to be in a highly pulverised state, equal to the finest garden mould—only covered with a large crop of surface weeds, an article abundantly prolific on this farm. To remove the surface weeds the drills were lightly harrowed, and a potato-grubber passed between them, and any soil that had thus been brought down was laid by a double-moulded plough, and the seeds, purple-top swedes, sown on the 11th of May. The result of this experiment seems clearly to indicate that in a similar way even the most stubborn land may be prepared for turnips; and, though it is not pretended that there is any thing novel or particular in this mode of tillage, yet as it is not generally practised, it may be of use to keep it before the public. When the crop began to be lifted, a friend suggested the idea of having a part of the field measured, and the crop weighed, which was accordingly carefully done; and though this season has generally been considered not the most favourable to the growth of turnips, yet the result in this case was found to be at the rate of 28 tons 18 cwt. of cleared bulbs per Scotch acre. The same variety of turnips was grown on another field of this farm, but here the soil was a light loam on a gravelly bottom. This field received an equal quantity of the same sort of manure laid on the stubble, and ploughed in betwixt the 10th and 17th of October last, and cross-ploughed and prepared for seed in the last week of April and 1st of May, and sown on the 22nd of May. A similar space of this field was measured and the crop carefully weighed, giving at the rate of 24 tons 5 cwt. of cleared bulbs per Scotch acre. If the additional produce be the result of the different period of tillage in the former case, and there is no reason to doubt that it is, this is another reason why the practice should be brought into public notice. —*Kelso Warder.*

PENRITH AGRICULTURAL SOCIETY'S ANNUAL PLOUGHING MATCH.

This society held its Annual Ploughing Matches on the 11th of March, in a field belonging to Mr. Isaac Young, of Longwathby. The weather throughout the day was very unpropitious, neverthless a great concourse of people assembled and remained upon the ground until the judges' fiat was made known. It was the general remark that better ploughing had never been seen in this county; in corroboration of which the judges (Messrs. Fair, Heskett, and Banatt) on making their awards, declared that owing to the work having been so well executed they had experienced every difficulty in coming to their decisions, which were as follows:—Class 1. For Men. To plough half an acre within four hours. First prize, 2*l*., awarded to John Lockhart, servant to the Whitehaven Banking Company, Scar Top, Cumberland; second prize, 1*l*., awarded to J. Davidson, servant to Mr. J. Varty, Longwathby, Cumberland; third prize, 15s., awarded to J. Bird, servant to Mr. Wm. Parker, Yanwath Hall, Westmorland; fourth prize, 10s., awarded to R. Stewardson, servant with Mr. Kirkpatrick, Brownlow, Westmorland. The judges highly commended the work of David Wright, servant with Mr. Hill, Edenhall, Cumberland, and regret they had not the power to award him a prize. The successful ploughs in this match (the bannerman) were made by Drummond, of Stirling, and were introduced in this county three years ago by Messrs. Benn and Watkin. Class 2. For lads under seventeen years. Same conditions. First prize, 1*l*. 10s., awarded to Robert Furness, servant to John Crosby, Esq., Kirbythore, Westmorland; second prize, 15s., awarded to James Fairbain, servant to Mr. Tainiswood, Salkeld Dykes; third prize, 5s., awarded to J. Thompson, servant to Mr. J. Young, Longwathby. The judges highly complimented the winner in this class for the first-rate style in which he executed his work; they also praised the winner of the second prize, he being (from his diminutive size) with difficulty able to reach the plough stilts. After the business in the field had been concluded about forty agriculturists sat down to an excellent dinner at the Coach and Horses Inn, Longwathby, James Banatt, Esq., president, Mr. Boustead, of Beck Bank, officiating as vice. The evening was spent in the greatest harmony and good humour, and all separated highly delighted with the proceedings of the day.

AFRICAN GUANO.

Since the discovery of guano on the islands of Western Africa, an immense number of vessels have been despatched to that quarter, several of which have returned with full cargoes within the last five or six weeks, to the extent, we should think, of some thousands of tons. This, of course, has produced a reduction in price, for it has been sold by auction at the brokers' sales as low as £6 10s. to £7 per ton, and it is expected to be much lower before many weeks elapse, because the market will be abundantly supplied for some time.

It appears that a prejudice has already arisen against the African guano, because it is said to be of an inferior quality to that from the Peruvian coast. We, therefore, advise caution in the purchase of it; not that we know any thing to its disadvantage, but such a report might have some foundation. If, however, the analysis of Mr. Huson, of Liverpool, prove correct, and we see no reason to doubt it, there is no fear of African guano proving amply sufficient as a fertilizer. We will, however, submit Mr. Huson's analysis:—

Moisture (water)	16·5
Free ammonia	6·5
Ammoniacal salts, chiefly urate and phosphate of ammonia	52·
Carbonate of lime	6·
Organic (animal) matter with phosphate of lime, traces of oxide of iron, and an inappreciate amount of silica	19·
	100

But guano, either from Peru or Africa, may not always arrive in this country in equal condition. It may have been wet with salt water, or it may have been so long exposed to the influence of our humid atmosphere as to lose a considerable portion of its volatile compound of ammonia, and thus suffer a diminution of its fertilizing qualities; so that from whatever quarter it may have been imported, caution is recommended in its purchase, that a good article may be secured.

It must also be borne in mind that, if it be not wanted for immediate use, it should be so protected that its qualities will not be deteriorated by exposure to either air or water.

CENTRAL SOCIETY FOR THE PROTECTION OF BRITISH AGRICULTURE.

A meeting of the general committee of this society was held on Thursday, the 21st March, at the house of the Duke of Richmond, and many influential landowners were present. Though the meeting was private, the following arrangements then agreed upon have been made public :—

"Rooms were taken at 19, Old Bond-street, and a secretary appointed, to whom all communications are to be addressed, at the society's rooms. The office hours were fixed to be from ten to four daily, during which time the secretary will attend. Reports were received, and unanimously adopted, from the finance, correspondence, and publication committees. Numerous letters were read from the country, expressing the most anxious desire to co-operate with the society, and several large sums were added to the funds. We are also enabled to state that, in addition to the favourable opinion already given by Mr. Platt, a case has been submitted to Mr. F. Kelly and Mr. Talbot, and their joint opinion has been given decidedly that the society is perfectly legal in itself, and that its rules are in conformity with the act of parliament."

HAIGH AGRICULTURAL SOCIETY & FARMERS' LIBRARY.

Sir,—Knowing that it is your wish to give publicity to everything connected with the improvement of agriculture, I send you the following information for that purpose.

The Earl of Balcarres, seeing much room for improvement amongst his tenantry, in accordance with the spirit of the day has originated an Agricultural Society for the sole purpose of forwarding that object. I do not know the particulars sufficiently to give them here, but I thought it necessary to apprise you of the main fact, because it is so often made a point of attack by Leaguers and such like, that the aristocracy are perfectly indifferent to the condition of their tenantry.

You know it is said that example is better than precept; and I suppose that because his lordship set a good example, his youngest son strives to emulate him. It appears that the Hon. Colin Lindsay has established a Farmers' Library, for the use of the tenants on the Haigh estate; and I can only say that if those tenants choose to avail themselves of the opportunities thus afforded by their considerate landlord and his estimable son, they may benefit themselves to an extent which they never calculated.

Hoping that both these institutions may flourish, the further particulars of which I will at some future time make known to you,

I remain, Dear Sir, your's truly,

AGRICULTOR.

WIGAN,
March 18, 1844.

THE ALPACA IN IRELAND.

The following interesting letter, addressed to Mr. Walton, has been handed to us for publication. It furnishes an account of the condition of the alpaca since its introduction into Ireland. A sample of alpaca wool was also forwarded from Ireland at the same time. It is of a dark brown colour, perfectly silky in its texture, about six inches in length, and may be seen at the shop of Mr. J. F. CANNELL, Agricultural Bookseller, Stationer, and Printer, 18, Castle-street, Liverpool:—

TO WILLIAM WALTON, ESQ.

Dear Sir,—In obedience to your request I have much pleasure in giving you a brief statement relative to the small herd of alpacas we have here.

These beautiful and interesting animals arrived at this place in the summer of the year 1842, previous to which, after landing at Liverpool from their native mountains in Peru, they were kept in that neighbourhood for some time. They are the only animals of their kind ever introduced into this country, and have been admired by great numbers of persons, many of whom came very long distances to see them.

Of course it is quite unnecessary to give *you* a description of these graceful creatures, for any one who has perused your excellent publication on the "Naturalization of the Alpaca," and has seen and observed the habits of the animal in question, will readily perceive how thoroughly you are acquainted with the subject of your work in its minutest details; but, I may inform you that the alpacas on this farm are of various colours, some being brown, others black, and one perfectly white. They have not been shorn since the month of June, 1841, and the average length of their wool at this time is eleven inches, and so firm to their bodies, that the smallest lock cannot be pulled off without great force, therefore they never lose a bit of their wool. It is exceedingly fine and silky, indeed, very much finer than any alpaca wool I have yet seen imported into England, and during the two years they have been here there is a visible improvement in the texture of their coat, and I think the wool of the alpaca lamb is superior in fineness even to that of the vicuna. I have frequently examined them very closely, but could never find upon them a wool tick, or any vermin whatever to which sheep are subject, and I was very much afraid during the exceedingly hot weather we had last summer, that from their great weight of fleece they would be attacked by the fly, but I am glad to say that no such casualty befel them, though sheep contiguous to their pasture were much injured by it. I have never, even after a whole day's rain, found them wet to the skin, for their wool, on becoming wet on the outside or surface, mats together and becomes quite impervious to the heaviest showers. I certainly do not exaggerate when I say that each of the old alpacas here would clip at this time upwards of 30 lbs. of wool.

I find they usually copulate here in the month of October or November, although the female invariably takes the ram immediately after having brought forth her young, which is generally in the month of May or June. At the age of nine months the produce, if of the feminine gender, will begin to breed, at which time their wool will be found to be six inches long—their height to the shoulder 34 inches, and their height to the top of the head 51 inches: the size of a full-grown alpaca is, to the shoulder, 37 inches, to the top of the head 59 inches. You state in your publication that they do not begin to breed till three years old, and I have no doubt you are quite right as regards those reared on the Andes or other high and barren mountains, but when brought to a more genial climate and better pasture the case becomes different, and they will breed, if allowed, at the age I have stated. It is the same way with cattle or sheep; when reared on a mountain, and scantily fed, they will not breed till they are three, and sometimes four years old, but, when reared on good pasture, they will begin to breed the first year. An alpaca lamb before being weaned is always very fat, and I think at this age they would be most excellent food; but, when they have attained their first year or so, like most fine wool-growing animals, they do not take on much flesh, no matter how good their pasture. They have no propensity to stray or wander away from their accustomed feeding ground, and the lowest fence will be found sufficient to keep them in the field. I have never attempted to obtain a cross with them and the sheep, nor do I think such a result would be desirable, even if it could be obtained, of which I have my doubts.

They are exceedingly playful, and to see them to full perfection a dog should be taken into the field beside them, and as they run at, and play with the dog, their fine and noble positions are displayed to most advantage. They are very sagacious animals : I had a young one, whose mother died when lambing, on her way from Liverpool here, that would answer to its name, and used to follow me about the farm like a dog.

From what I have observed of the nature and habits of the alpaca I do most heartily confirm your statement,—that "they would live where a sheep would starve," and would be most valuable as a breeding stock in the United Kingdom, and they are peculiarly adapted to mountainous districts, however coarse the herbage, if the ground be dry, although, at the same time, I will say that the alpaca is as fond of a bite of good sweet grass as any animal I know of.

The herd of alpacas here are the property of J. J. Hegan, Esq., of Liverpool, who was induced to send them to Ireland at the request of William Danson, Esq., whose praiseworthy exertions to introduce them extensively into the United Kingdom are well known, and the results of his calculations as to the value of their wool for the manufacture of fine fabrics likely to supersede silk are proved to be correct. The following queries from the Academy of Sciences, at Munich, were lately addressed to him, through the Royal Agricultural Society of England, which shows the interest attached to the subject (of which he has proved himself such an able advocate) in other parts of the globe:—

1st.—How many alpacas have been already imported into this country?

2nd.—What is the amount of their wool sent over annually from abroad?

3rd.—Is the wool preferable to that of common sheep?

4th.—Can the animal be easily acclimated and fed in mountain districts?

5th.—Have any experiments been made in England with the wool of the alpacas?

6th.—Does the wool admit of being spun by the spinning wheels in use for the wool of the common sheep, or does it require a particular sort of wheel?

7th.—Has the importation of the alpaca proved useful and beneficial, and what is the general opinion of the wool for manufacturing purposes?

If your knowledge of South America and the districts where the alpacas most abound suggests to you a route by which they can be brought to our shores at a greatly diminished cost to those which have hitherto arrived, you will, by making it known, confer an eventual benefit to the country generally, for undoubtedly we should soon establish this profitable and desirable breed of animals permanently and extensively in our own country.

I am, dear sir,
Your obedient servant,
ROBERT BELL.

GUNSBRO', near Listowel,
March 18, 1844.

SOUTH DEVON PLOUGHING MATCH.

The first ploughing match of this association took place on the 8th of March, in a field in the occupation of Mr. Lizard, in Berry Pomeroy. The weather was most propitious, and the attendance very numerous and highly respectable. The piece of land used for the match was a beautiful well-conditioned lea, and the competition was very spirited, upwards of 60 ploughs having entered the lists, and the work generally was of a superior description; eliciting the unqualified commendations of the large assemblage of landowners, farmers, and others on the field. After the ploughing match and other prizes had been competed for, a special general meeting was held at the society's rooms, in Totness, which was adjourned to the Mayoralty House, where an excellent dinner was served up by Mr. Sawyer, of the Castle Inn, which, with the wines, &c., appeared to give the most ample satisfaction.

Among the company we noticed the Chairman, Lord Seymour, M.P., Lord Courtenay, Lord Cranstoun, Sir R. Newman, and C. Champernowne, G. S. Carey, — Cornish, G. Studdy, W. J. Clark, H. Cartwright, C. H. Mallack, J. D. Beilfield, Esqrs.; the Reverends J. Belfield, — Johnson, — Kitson, — Cousins, — Allen and Woolston; Dr. Barry, and upwards of 200 of the aristocracy, gentry, landowners, farmers, and others of the neighbourhood.

In the course of the evening the successful candidates were called in and presented with their prizes. This was a most gratifying spectacle—here was the youth, the middle-aged labourer, and the old man of seventy, alike rejoicing in their happy and proud position.

Lord Courtenay said he had been requested by the committee to address a few words to the honest countrymen and labourers then before them. It was an object of interest to see so large a portion of the landowners and farmers met together to advance their common interest, and that of the industrious and deserving agricultural labourer. In addressing the successful competitors he was aware that he was speaking to a large portion who had not merely brought their strength and sinew to the contest of the day, but had also brought with them the good opinion of their employers. The noble lord then noticed the several successful competitors. He said that among those who had won premiums by ploughing was Henry Symons, who he understood was a mere youth, being at present not more than 19 years of age, but who on several former occasions had carried away the premiums. He hoped that he might go on his course until he attained the age of the worthy old man that had carried off a prize for long servitude, having, as stated, been *sixty-three years in one place of service.* After specifying several cases, the noble speaker, addressing the successful candidates, said that they should bear in mind, that in addition to the actual prizes, they carried away with them the good esteem and regard of all to whom their characters had become known. To those who had brought up large families he spoke in terms of high commendation, and brought his speech to a close amidst deafening shouts of applause.

Sir R. Newman proposed "The honest peasantry, the country's pride." As agriculturists they knew the value of the peasantry of this country—a peasantry which he believed was not to be equalled in the world. He had been many years a farmer in that neighbourhood, and had employed agricultural labourers, but he never heard of one of his men receiving anything from the poors' rate. He did not say this boastingly, but for the purpose of alluding to a practice which he had adopted when a farmer, and which he most heartily recommended. *It was his practice to employ his labourers permanently, rain or shine.* While he only gave fair wages, he found the course he had adopted invariably successful in preventing his men from coming on the poors' book. The hon. baronet delivered his sentiments with evident emotion, and was heartily cheered throughout.

The Rev. Mr Johnson, of Deptford, returned thanks on behalf of the successful candidates.

The Chairman said, while he was diametrically opposed to the political opinions of the hon. members for the southern division of the county, yet he heartily concurred with them in their patronage and support of this institution; and it was with great pleasure that he gave "The Health of the hon. Members for the Southern Division of the County."

Lord Courtenay, on behalf of Sir John Buller (who was unavoidably absent on his parliamentary duties) and himself, returned thanks. He confessed himself to be very deeply interested in the welfare of the association, believing the prosperity of agriculture, which it was designed to promote, was not merely an advantage to this particular county, as co-operating with the metropolitan society for a similar object. The noble lord concluded by proposing "The Health of the Earl of Morley, the President of the Association," which was drunk with three times three.

G. S. Carey, Esq., acknowledged the toast.

The Chairman, in proposing "The Prosperity of the Association," remarked on the great progress which had been made in the study and practice of agriculture. It had, he said, advanced from a mere art, dependent on the practice of former ages, to a science. In his opinion, agriculture would go on to progress in a ratio scarcely calculated on, by means of the aids of experiment and science, especially that of chemistry and geology. Associations of that kind were useful in bringing within the reach of all its members the results of the various experiments, and the discoveries made, tending to advance the prosperity of agriculture—as tending to a combination of the landowners, tenants, and agricultural labourers—as encouraging by the award of prizes for improvements in the culture of land—and as connected with the several branches of agriculture—and as assisting to solve the great problem of all agriculturists, *i. e.*, how to produce the best crops at the least possible expense? He was of opinion that prizes should be appropriated to the small cultivators, even to the possessor of an orchard or an allotment, as well as to the most extensive farmer. The noble chairman spoke at considerable length, and with much effect.

J. D. Belfield, Esq., said—Contrary to the fears of some, the association was progressing most prosperously. The number of subscribers had within the last few weeks been very greatly and influentially augmented. The annual subscription had increased to £130 and the contributions to £54. The small tenant farmers were also beginning to unite with them in greater numbers. At this he particularly rejoiced, because he regarded that class as the most important to the true prosperity of such an association. Mr. Belfield testified to the zeal of the noble chairman in supporting the institution, and concluded by giving "The Health of the Noble Chairman," which was drunk with due honours.

G. S. Carey, Esq., in a humorous speech, gave "The Judges of the Land," adding, he meant the judges of the furrow. He spoke of bad ploughing as a satire on the land, and of good ploughing as a compliment to the land.

Mr. James Fairweather, of Marlborough, returned thanks. "The Committee" and "The Secretary" were duly honoured; several other toasts followed, and the meeting, which, throughout the whole of the proceedings, was most unanimous and enthusiastic, broke up with feelings of general satisfaction at about ten o'clock. At a special general meeting of the association, held at the society's rooms, on the Tuesday previous to the above, Lord Morley was elected president; and Lord Seymour, Sir J. Y. Buller, Bart, M.P., and G. S. Carey, Esq., were elected vice-presidents.

FACTORY LABOUR.

Sir,

Since I sent you my last letter, I have seen the debate on the Ten Hours' Factory Bill. The accompanying letter is on the subject, which I have had printed years ago. I think the reasoning must be sound, provided the mills of all countries worked the same hours. Should you think it worth a place in your Magazine, it is at your service.

I am, Sir,
Your obedient servant,
Cadogan Williams.

Sir,

Perhaps there is no part of Scripture that proves the truth of its Divine origin more than the establishment of a sabbath for the Jews; for its insitution is so opposed to the selfishness of man, that no person under ordinary circumstances, that wished to gain ascendancy over his fellows from ambitious motives, would ever propose such an institution; for what would be told him, but that the people find it difficult to live now they work seven days; they will find it more so when they only work six? Or suppose such a law was proposed in China at the present day, would they not think the person mad? But now, with respect to the political economy of the question, I believe it is the opinion of political economists that, did the working classes labour seven days, they would not get more towards their subsistence than they do by labouring six out of the week. That is an important truth, if it be so, which I believe it is. By parity of reasoning, if the mighty machinery of the manufacturing districts were only kept working from six to six, the labouring classes would be just as well off as if they worked eighteen hours, as to the returns they would get for their labour. It has, I believe, been asserted in the House of Commons that it was difficult enough for the working classes to live now; if they worked fewer hours they would be worse off. Did not that assertion proceed from erroneous views, or from selfishness? What remains for the political economist is to teach the above truth, if it be so. Then the working classes would, I dare say, have influence to regulate the hours of labour without acts of Parliament; as they would only have to agree not to work more than ordinary hours, and the machinery must stand still. Besides the good effect it would have as to the hours of labour, would it not have the effect of rendering the markets more steady by counteracting the reckless spirit of speculation, which is so prevalent and baneful to all ranks of society? Of course the cupidity of speculators in times of great demand and prosperity would be urging them to work additional hours, by saying they were losing markets, and other arguments. Yet probably they would be consulting their own interests and the interests of the public by only working the ordinary hours.

Your obedient servant,

C. W.

NEWCASTLE, March 23, 1844.

HIGHLAND AND AGRICULTURAL SOCIETY.

At the last monthly meeting, under the Presidency of Sir G. M. Grant, of Ballindalloch, Bart., the following report of experiments with certain special manures recommended by the society, with the addition of other substances, made by J. Finnie, in 1843, on the farm of Swanston, Mid-Lothian, at an elevation of 600 feet above the level of the sea, was read by the experimenter:—

OATS.

	Gain.	Loss.
Ground rape cake		£0 5 11½
Ammoniacal salts	£0 7 3	
Common salt	0 12 10¾	
Nitrate of soda and sulphate of soda	1 6 10¼	
Nitrate of soda	1 15 4	
Foreign guano	3 19 8¼	
Artificial guano	3 3 8½	
Bones dissolved in sulphuric acid	0 4 2½	
Ammoniacal liquid		0 8 1½

BARLEY.

	Gain.	Loss.
Saltpetre		0 15 5
Nitrate of soda and common salt	0 8 6	
Common salt		0 6 9¼
Foreign guano		0 1 9½
Artificial guano		0 19 6½
Bones dissolved in sulphuric acid		1 0 3½
Humus	0 2 1	
Ammoniacal salts	1 7 4¼	
Nitrate of soda	1 8 4½	
Ground rape cake	0 6 11½	

TARES.

	Gain.	Loss.
Gypsum		1 1 3¼
Foreign guano		0 10 11
Artificial guano		0 13 6½
Nitrate of soda		0 5 0¼
Humus		0 8 2½
Nitrate of soda and sulphate of soda	0 1 0	
Sulphate of soda		0 15 1¼
Bones dissolved in sulphuric acid		1 1 4½
Ammoniacal salts	0 1 4¼	
Ground rape cake		0 12 7½

TURNIPS.

	Gain in bulbs.	Loss in bulbs.
Bone dust		1 9 11½
Sulphate of soda	0 18 0¾	
Burned bones		2 1 11½
Rape dust kept over year		0 5 11½
Second quality of rape dust	0 6 0¾	
Best quality of rape dust	2 8 1	
Inferior linseed cake	1 10 0¾	
Bones dissolved in sulphuric acid	0 18 0¾	
Humus	0 11 0¾	
Artificial guano	0 0 0¾	
Nitrate of soda		0 12 0
Ammoniacal salts	3 18 0½	
Foreign guano	2 8 1	

GRASS.

	Gain.	Loss.
Sulphate of soda		0 0 10
Common salt	0 0 7½	
Nitrate of soda	2 18 8	
Foreign guano	1 0 10½	
Concentrated manure		0 5 7¾
Ammoniacal salts	0 16 10½	
Sulphate of ammonia	1 8 5¼	
Refuse saltpetre from powder-mills	3 2 5½	
Muriate of ammonia	0 12 8½	
Sulphate of magnesia		1 4 0
Saltpetre	0 11 9	
Soot, 30 bolls of 4 bush., at 1s. per boll	3 2 6	

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IRREGULAR RESULTS FROM THE APPLICATION OF GUANO.

SIR,

In reading over the statements of various applications of guano which have appeared in the agricultural periodicals and newspapers, the results are so widely opposite, that the enquiring mind naturally seeks for the causes of such difference. In revolving the matter in my own mind, I am inclined to refer it either to the variation that there may be in different samples of guano, or to an improper time and manner of applying this singular manure to the ground.

It is very well known that guano is not by any means of a uniform quality. Some kinds contain little or no sand, while as much as 30 per cent is found in others. Water, too, varies in like manner from 11 to 16 per cent. Ammonia the same; Dr. Ure found some guanos without it, while others had from 7 to 17 per cent. The presence of this valuable constituent may be generally detected by the pungent smell which it gives off, but the *quantity*, as well as that of the other constituents, the chemist only can determine. The purchaser, therefore, should chiefly rely on chemical analysis, as he himself can have no judgment in the matter. It is the practice, I believe, with some dealers in this article to have analyses of each cargo as imported, which must indicate the extent of the fertilizers in the guano, and which the purchaser should invariably consult; or, if the dealer have no analysis, let the buyer obtain one himself.

Guano is apt to lose a great portion of its ammonia on exposure to the air; in fact, it is constantly escaping, as the odour attests. The sooner, therefore, guano is used after the farmer gets possession of it, the more benefit is he likely to derive from it; if, however, he cannot use it immediately, he may prevent the escape of the ammonia by the following cheap and effective application :—For each ton of guano he may have, let him get 30 pounds of oil of vitriol; dissolve it in double its weight of water, and then thoroughly mix it with the guano. He will find this simple mixture will not only preserve his guano from further deterioration for any length of time, but that it will also make it more serviceable when it shall be applied to the land.

Besides the variation in the quality of guano as imported, there is another to which it is often subject before it can reach the farmer's hands, and that is *adulteration*. This is carried on to an extent which may appear incredible; but it is a lamentable fact, and there is no surer method of detecting it than by analysis. Of course respectable dealers are above this barefaced roguery, and the purchaser may safely deal with such; but guano finds its way into the hands of artful dealers, who, having no conscientious scruples, victimize all who have the ill luck to deal with them. I therefore recommend the purchaser always to apply to the importers or to some respectable broker at the port where it is bonded, and they will take care that he has it *direct* from the bonded stores. I have heard serious complaints of the audacious extent to which guano is adulterated by many of the inland dealers; and, where the farmer is compelled to deal with such, let him look sharply after his own interests. Cinders coated with lime, sand, clay, and such like cheap things are used for the purpose; and I have heard of oatmeal, damaged by salt water, and which stunk as admirably as the party could desire, being used to aid the deception. In such cases the farmer pays as much for this rubbish as he should for the genuine guano; while the proportion of the latter in such matters is so small, as to render little service in the mass when applied to the land.

Now it cannot be supposed that farmers are so conversant with guano as to detect these adulterations; they must, therefore, rely on analyses, or quietly allow themselves to be duped. An analysis may be obtained for a trifling sum; indeed, I have seen a proposition from a Mr. A.

Gyde, of Painswick, addressed to the Farmers' Clubs of Gloucestershire and neighbouring counties, that if he were elected chemist to a club at an annual fee of £5 5s., he would test samples of guano and other saline manures for the members at 3s. each sample. But suppose an analysis should cost 8s., 10s., 15s., or even £1, is it not worth a purchaser's while to have it? Or could not two or three of those who wanted guano, subscribe to pay for the analysis? I should certainly recommend such a course; because, there probably is nothing in which a farmer deals, or though which he is more at the mercy of designing knaves, than in the article of manure generally. A combination, therefore, will raise the money necessary for their protection against such robbery, which, individually, would prove of very trifling amount.

It is much too obvious to be mistaken, that the differences in the quality of guano must produce proportionate results; and it is sheer nonsense to decry that manure because the farmer may have got hold of spurious stuff. Genuine guano is known to contain the very ingredients in its composition which cannot fail to produce the most powerful manure; and we have the best authority for such assertion. Its effects on the arid sands of Peru, where it has been used for ages to the present time, are of the most extraordinary kind, and the opinions of every eminent chemist who has analysed it, and of very many enlightened cultivators who have used it, concur in estimating it as one of the first of manures.

There is, however, no doubt, that much has yet to be learned in this country regarding the proper manner of, and time for, applying guano to the land. Some of our early experimenters, unaware of the burning nature of this strange substance, incautiously drilled it in its pure state along with the seed, to the almost entire destruction of the latter. Subsequent practice, however, has decided that guano should be well mixed with ashes, soil, &c., before being passed through the drill; while another method consists in putting the guano alone on the land, ploughing it in, then harrowing, so that it shall be thoroughly commingled with the soil before the seed be sown. Both these ways may be well enough, but cannot a hint be taken from the Peruvian method, and put into practice in Europe? The Peruvians apply guano to the growing crops at three different times: first, as soon as the seed has germinated; secondly, when the plant comes into flower; and, thirdly, when it is forming its seed; and after each application the land is duly irrigated.

Now of all the experiments I have seen recorded, not one states that the guano was applied in the Peruvian manner; and which seems most extraordinary indeed. Why is this the case? Irrigation might not often be needed with us, as we so frequently have rain; but what is there to hinder the application of guano to the three different stages of the growing crops? Perhaps it may be considered too expensive: why not try twice, then, on a small plot, after the germination and at the flowering, while the remainder shall have been guanoed in the usual way; and let the result determine the practice which shall be followed in future?

I am Sir, yours obediently,

W. JACKSON.

April, 20 1844.

ON THE BEST METHOD OF IMPROVING THE CONDITION OF THE ENGLISH AGRICULTURAL LABOURERS.

The following praiseworthy resolutions were agreed to at a late meeting of the Northamptonshire Agricultural Book Club. We consider them as a step in the right direction, and hope they will be extensively adopted; for there is no surer way of ameliorating the condition of the labourer, than by showing him that he is actually cared for, apart from his daily labours, and by those, too, whom he has often considered incapable of such kindness. Stubborn though he be, he can well appreciate kind actions; they touch his feelings and soften his harshness, and will do much towards weaning, if not curing, him of all idle and vicious habits:—

Resolved,—That it is the opinion of this meeting, that the best mode of improving the condition of the agricultural labourers is,—

1. By establishing and encouraging, in every village, daily and Sunday schools for useful and religious education.

2. By promoting the establishment of clubs upon a sound and permanent basis, for providing funds for the relief of the sick and superannuated; and also clothing and washing clubs.

3. By procuring cottage gardens, not exceeding one rood, of good land, near to the residence of the occupier, and, where practicable, attached to his house.

4. By providing labourers with comfortable cottages, containing not less than two bed-rooms.

5. By paying the labourers weekly on a Friday, instead of Saturday, thereby giving them an opportunity of laying out their earnings to the best advantage.

6. By adopting every possible means of giving constant employment to the agricultural labourers throughout the year, and of paying them according to the work performed, and not according to their necessities.

7. By pressing upon the attention of the members, composed of landlords, land agents, and tenant farmers, the importance of carrying out the spirit of the 6th resolution, by devising means of increasing labour in such a manner, as will secure to the employer a return equivalent to the additional outlay, without which the occupier cannot afford the expense consequent upon such increase of labour.

UNFAIRNESS OF EXCLUDING IRISHMEN FROM LEADING AGRICULTURAL SITUATIONS IN IRELAND.

I hope I may not be considered illiberal in my views on the appointment of *imported* "agriculturists" into Ireland; or, if I am to be so charged, let it be set down to my "nationality."

I do not intend to mince the matter, but shall at once deprecate the system as an evil to be added to the many which my country endures. I blame not the government for this, nor for much that she suffers; but I blame her people for not paying more attention to "national" interests, in fact, for not minding their own affairs.

Why is it, then, that so many "agriculturists," as they are styled, are brought over to this country? Is there really a lack of the necessary ability amongst Irishmen; or is it that the appointment rests with individuals who love them not so well as they love their own countrymen?

Now these are questions that must naturally occur to any one who will give attention to the subject; but what are the answers to them? To suppose that Irishmen know any thing of agriculture is quite preposterous in some quarters; but to make the Irish gentry believe that, is still more so. Such, however, is the fact. It may be denied, but let the appointments speak; and you will then see the value that is set upon an Irishman in his own country. Our tradesmen also are sufferers by the appointment of strangers, as the latter almost invariably send out of the country for what seeds, implements, &c., they may want.

I shall not, however, attempt to seek out or trouble myself farther about the cause, but say a word or two on abolishing such an odious system; discreditable to Ireland and cruel and unjust to her sons.

In the first place, then, I speak of "nationality." In the United Kingdoms of Great Britain and Ireland, the Channel Islands, &c., there ought to be no *sectional* nationality, it operates so strongly against *general* improvement: it is, or ought to be, enough that we are Britons. This is a relic of the barbarous times of feudalism, and ill accords with our "enlightened" generation; it is, indeed, a subject for the severest reproach, and ought to be held in the utmost detestation by every liberal-minded man. And to me there seems to be no approach towards a different state of things, but the reverse; it being quite common to *judge* a man's abilities, or, rather, to take them for granted, when he names the land of his birth! I may be wrong, but to my fancy the Highland and Agricultural Society of Scotland and the Royal Agricultural Society of England, in the way they are now managed, tend but to increase the evil, and make still wider the breach it is so desirable to heal. Well, we are following sharply in the wake of those societies, for, in the phraseology of the day, *we* now have a "National" Agricultural Society; and as we are thus compelled to take our stand, let us, as our only chance, make that society really and truly what it ought to be.

That such a society could effect the greatest change in the social condition of Irishmen, is what few will doubt; and with respect to improving the natural resources of the country, we have but to look at the improvement the Highland Society has effected in the agriculture of Scotland. Every right-minded Irish landed proprietor ought, therefore, to look to this; as by duly supporting our society and looking well to the management of it, we can do more for the real good of Ireland in ten years, than all our political agitators would effect in centuries.

It is not my intention to prescribe a system of management for that society, nor to meddle with its arrangements on any point, except that of *justice to Irishmen.* In the first place, then, let the society start fair, by divesting itself of all prejudices against Irishmen, or partiality for strangers. Whenever a farm manager, or "agriculturist," if you like the term better, is wanted in Ireland, let a native of that country be appointed. It is mere humbug to say that such can not be found; and it is most shameful and cruel not to find him. By constantly obtaining strangers to hold the chief places, the natives are kept in the condition of mere labourers; grovelling subordinates; in many cases tyrannized over by brutal mindless beings, who only regard them as half savages, entitled neither to compassion nor kindness, and which are consequently withheld; and bowed down by the harrowing thought that not a man among them is considered worthy a better situation. This, doubtless, forms one of those deep-seated grievances which hastens their departure to other shores, despite the lasting love it is known they invariably bear to their native land; for it must gall even the most patient to see such a vexatious state of things.

This, however, is a desponding view of the subject, for which there now appears to be no necessity. In the proceedings of our society I see much that is cheering; and my sincere hope is that those connected with it will not flinch or hang back from what they have commenced. Let them take proper steps, then, to elevate the national character; and there never was a better period than the present, when temperance has paved the way; and they will find the wants of Ireland can, in every case, be met by the energies and abilities of her much traduced sons.

I have the honour to be, Sir,
Yours obediently,
AN IRISHMAN.

DUBLIN, May 1, 1844.

ON THE MANAGEMENT OF GRASS LAND, THE BEST ROTATION OF GREEN CROPS, &c.

At the May meeting of the Stewpony Farmer's Club on Monday, the patron, J. H. H. Foley, Esq., stated that, at the meeting of the Agricultural Society, held that morning, it had been determined to appoint a chemist, at a small annual salary, who would analyse soils, manures, vegetable products, &c., for a small charge, not only for the members of the society, but for the members of the farmers' club also; thus the club, as the agricultural society would pay the annual fee, would cheaply obtain much serviceable information. Mr. Foley then read a paper on the management of grass land, and the best rotation of green crops, from which we make the following extracts:—

"In 1821 I came to reside on my property, after an absence—during a minority, and three years afterwards, spent abroad—of seventeen years; during which time my agent had no authority to spend money in improvements, and my tenants, besides having annual agreements, did not know what my feelings might be with regard to them. It could not, therefore, be expected, that they would make any outlay beyond the ordinary cultivation of their land. I found that I had 217 acres of meadow land, valuably situated, with the rivers Stour and Smestow running through them, but in the most deplorable condition that could possibly be imagined, and ought more properly to have been called marshes; many of them could not be used for hay, for on enquiry I found they had not been carted on for thirty years; rolling and manuring were out the question, and would have been useless. They varied in rent from 15s. to £2 per acre, and my tenants were very fond of them, they caused them no trouble or expense, and they said they threw up plenty of useful keep in a hot summer. In 1822 I set to work to drain the meadows with tiles; this I found to be a tedious operation, owing to the great variety of the ground, being in some places strong clay, in others peat bog and sand, and abounding in springs. The draining has been constantly going on ever since, but I hope will be completed in another year; the expense has varied so much with the nature of the ground, that I cannot give an accurate estimate of it. Of the grass land drained I have made use of a trench, formerly cut, to convey water to some wire mills, to irrigate 53 acres; to these I have added 125 acres of permanent pasture. For the land drained my tenants have paid me, on the average per acre, a pound a-year, in addition to their former rent; for the water meadows a pound more; for the land laid down 10s.

"Farmers who have no water meadows always take spring grass for their ewes and lambs, and they are often obliged to give as high as 45s. an acre, and never less than 30s. In feeding off the grass the sheep are penned in the same way as on turnips, and are never allowed to go back beyond a certain distance, as the irrigation follows the feeding by the sheep. After the water meadows are eaten off, rye, Italian ryegrass, or vetches, succeed, and these are also penned and eaten off by the ewes and lambs intended for early sale. These water meadows produce from one and a-half to two tons of hay per acre, and the aftermath lets for 30s. per acre.

"Before laying down permanent grass pasture, I applied to Mr. T. Gibbs, the seedsman, corner of Half-Moon-street, Piccadilly, describing the nature of the soil I wanted to lay down. This was generally a light sandy loam; and it was the opinion of all the most experienced farmers in the country that it would not answer the purpose. Mr. Gibbs supplied me with such seeds as he thought proper, giving directions how they were to be sown, and advising that it should be in April, without any other crop; that the grass should be mown early, before going to seed; and manured, without being grazed, the winter following. This excellent advice was never followed, the land not being in my own hands; the seeds were invariably sown with a crop of barley, but notwithstanding these disadvantages, not a rood out of 125 acres failed. The cost of these seeds varied in different years from 40s. to 53s. per acre.

"Of the very important crop, turnips, after Mr. Wilson's able lecture last month, it would be superfluous for me to say anything, excepting this:—That though it used to be considered uncertain, since my tenants have adopted the new system of early sowing, ridging, and drilling, they have, for the last 11 years, never had less than 400 acres fit for the inspection of anybody, and their seeds have never failed; the flocks are doubled in number during the last 20 years; and the produce of their arable land will average 10 bushels more grain the acre. It gives me pleasure to see the sheep now penned on the turnips, and the slicer actively employed. I think it would be found good economy to store such turnips as are intended for spring consumption. The fear of mildew prevents many from early sowing, but I believe it to be frequently caused by want of moisture, and I think it may be often remedied by deeper ploughing.

"I next come to the practice of consuming your green crops. *Habit becomes second nature;* you have always been accustomed to have regard to the management of your corn, and if your carter were to throw a bushel of oats to each horse to eat at once, you would feel very angry, and think him guilty of great waste; and yet it is a common practice to allow four or five animals to gallop about without restraint in a field of clover up to their bellies. Foreigners take as much care of their green food as you do of your corn. Their cows and horses are soiled in the farm-yard, and they well know that the provender will pay 50 per cent for cutting, by the additional time it lasts, and by the quantity of manure gained. I have already stated my opinion, that a pasture divided will last twice as long as one undivided; and that provender cut will go twice as far as in pasture divided. I think that seeds manured the first season will be twice as profitable as if manured previous to wheat-sowing; that grass land manured with either 10 tons of good muck, 3 cwt. of guano, or a similar proportion of bone-dust per acre, once in three years, will make a most profitable return, if properly treated; that is, cleared of stock in the winter months, put up for hay in April, and well rolled after wet. An application of urine from the farm-yard, conveyed in a water-cart, would be of great advantage; and the addition of oil-cake, corn, and salt, in troughs for sheep, would improve the health and condition of the animals, the quantity of the manure, and length of time they might be fed upon the ground.

"The last observation that I have to make is, that animals kept warm will fatten and require less food than those which are exposed to the severity of the wet and cold.

"Mr. Baldwin, of Birmingham, states thus:—'I knew an instance of an individual who bought 40 ewes, divided them as near as he could, weighed each score, and also divided an acre of swedes which had about 24 tons on it; the one half he harvested in good time, and the other half he let remain, and ate them off with 20 of the ewes hurdled in the usual way. The harvested half he had cut, allotting to each of the other 20 sheep eight or nine pounds per day, in a dry shed adjoining his yard, with a bit of ground to run on in good weather, but never allowed them to be out in bad weather, and the result was as follows:—When the 20 that had been hurdled on the swedes had consumed their half acre, the other 20 fed at home had got one-third of theirs left; and he then weighed each lot of sheep, and those that had been hurdled had made on an average about 12 lbs. of mutton each; and those that had been fed at home on the swedes that had been harvested well, had made 18 lbs. each, although they had only consumed two-thirds of the quantity of food.'

"Mr. Baldwin, after recommending that swede turnips should be sown early in May, and that the rows should be placed not less than three feet asunder, for which he gives many good reasons—thus accounts for mildew, at page 12 of his pamphlet:—'The sun, in dry weather, acts like a cupping glass, as it has the power of drawing the moisture upwards; and if you intend to get a large crop of swedes, you must never allow above 12 or 15 days to pass without ploughing between the rows, but by no means ever plough between them in wet weather, and the drier the weather the deeper you should plough. If you should attend to this, you will never find the tops go blue, which is what most people call mildew, but what should, in reality, be called a want of attention on the part of the farmer, and which, if once allowed to take place, there is pretty nearly an end to the growth of the crop; but this ploughing you could not effectually do if the rows were nearer together than three feet."'

[We call the attention of our readers to the notification made by Mr. Foley to the Club, of the intention of the Society to appoint a chemist for the benefit of both institutions, as an example worthy of general adoption. The chemist is as necessary to the progress of agriculture, as the left hand is for the support and assistance of the right; and although we certainly might blunder on without him, we cannot but admit that we should be considerably the better for his advice. We therefore urge all agricultural societies and farmers' clubs to make similar appointments; and their members will discover that the chemist is a counsellor whose knowledge can be turned to their especial benefit, and that, under his guidance, they can pursue their avocations with much more safety than they could without it.—Edit.]

ON THE SOUTHAMPTON MEETING.

By CUTHBERT W. JOHNSON, Esq., F.R.S.

The annual country meetings of the Royal English Agricultural Society have now, fortunately for the interests of the farmer, become of even national importance. It is idle to deny that these great gatherings have at once improved the practice, and elevated the English farmers to a higher rank than they ever before attained. And there is as yet no symptom of the onward march of agriculture being stayed—improvements of all kinds are annually discovered—better animals—superior implements—more scientific modes of cultivation are brought forward—the tide is still rising. Let every one, therefore, do his best, however little the tribute may be, to add to the usefulness of these meetings, and to the gratification and instruction of the farmers who attend them. It is in this spirit that I propose to sketch the chief objects worthy of the notice of the visitor to the Southampton July Meeting; and to this end I shall not attempt to exhaust the subject, but merely repeat and enlarge upon what I have elsewhere had occasion to remark *(Farmer's Mag.*, v. 9, p. 392); for, as I have before observed, during the hurry, excitement, and contending objects of interest which press upon the visitor's attention at, and on the way to, these highly useful and brilliant meetings, it is difficult for the farmer to coolly select for his inspection the most valuable objects which commonly surround him.

Supposing that the visitor take his departure from London, the agricultural features of the line of the South-Western Railway, which present themselves for the first portion of his journey, are neither remarkable nor instructive; till he have passed the Kingston station, he will find little but the rich lands of the market-gardeners: soils made so rich by the constant and copious application of manure from the London scavengers, as to set the ill effects of the vilest farming, the most execrable rotation of crops, utterly at defiance. Leaving these, the Kingston station is approached: some gravel slopes in the lovely district around Kingston are noticeable more for their richly-wooded scenery than for the farming with which they are commonly disfigured. Passing the Kingston station, the train almost immediately enters, and for about thirty miles traverses, a barren heath district, which, with little interruption, extends to beyond Winchfield; and now the farmer will have quitted Surrey, and have been for some miles moving through the county of Hants. Soon after he leaves Winchfield, the agriculturist will gladly quit that dreary series of heaths which must have disgusted him so long. The intelligent farmers of Norfolk, and of other English light-land districts who have made such magic improvements upon the drifting sands of the East of England, will hardly, without pity, view these neglected, miserable heaths. It is idle to say that nothing can be profitably effected in bringing these lands into cultivation. The farmers from other properly-cultivated, although as naturally poor, districts, will readily allow, however, that nothing like profit can be expected from such soils, if they are treated as they are at present; such a ludicrous system of drainage, of enclosure, of planting, undrained swamps, over unbroken moorband pans, adorned as they are, of a natural consequence, with a wretched collection of yellow-tinted, worthless Scotch firs, could not in the nature of things ever be productive of profitable results to their indolent and ill-informed owners. It would be very desirable, I think, if the attention of either the government or of some public land-improving company was directed to the improvement of these utterly neglected heaths. It is quite evident that, to their present owners, they are worse than useless incumbrances. The portion of the county of Hants into which the farmer first enters is near the Farnborough station. In a report drawn up some years since for the consideration of the Board of Agriculture, the whole of this county was divided, for the convenience of description, into five districts; the first of these in which the farmer will find himself, is, in the report alluded to, called the Woodland District. The general character of this, however, as there described, hardly corresponds with the portion of it traversed by the South-Western Railway trains. This division of about 103,000 acres includes the whole county to the north of a line drawn from Farnham in Surrey, to the south of Odiam, and the north of Basingstoke to Eastwoodhay. The reporter describes the predominating soil to be a strong brown or gray loam, resting upon a tough blue or yellow clay, generally wet, and in some places boggy. In the eastern part are tracts of a dark-coloured, sandy, or gravelly mould, of a good depth, and resting upon a dry subsoil; but even these are intermingled with a strong wet and brown loam. Along the borders of the rivulets lie tracts of meadow and pasture lands, the soil of which is a sandy loam, resting on clay, loam, peat, and gravel, and abounding in springs. Proceeding northward from the Woodland Valley, the soil becomes by degrees of a lighter quality, until the improvement is lost in a thin, sandy or gravelly mould lying upon deep beds of white, red, and yellow sand, and gravel, and a wet hungry loam upon a moist loose white and yellow clay. Along the south side of this district, the soil is of a mixed character, something between the heavy loams we have just noticed and the chalk to which it is approaching.

As the train arrives within rather more than a mile of Basingstoke, the farmer will see to his left hand the ruins of Basing House, memorable, in the days of anarchy and rebellion, for the noble stand here made against the Republicans of the time of Charles the First, by the gallant ancestors of the present family of the Paulets.

There appears to have been, says a writer in the Penny Magazine, a castle here at a very remote period; for in a grant made to the priory of Monks' Sherbourne, in the reign of Henry II, mention is made of the "old castle of Basing." This appears to have been rebuilt in a magnificent manner by Paulet, the first Marquis of Winchester, a nobleman in some degree remarkable for his skill in courtiership: he lived during four reigns—those of Henry VIII, Edward VI, Queen Mary, and Queen Elizabeth, and enjoyed the royal favour in all. We may add, that he himself is said to have explained the secret—the "being a willow and not an oak." We have said that he rebuilt Basing House in a magnificent manner: according to Camden it was rendered *so* magnificent and costly as to be "overpowered by its own weight;" the expenses of living it entailed upon the owner were so great, that the builder's posterity were forced to pull down some part of it. In this splendid mansion the Marquis had the gratification of receiving Elizabeth in 1560, and of entertaining her in so royal a manner that she playfully lamented his great age, remarking, "By my troth, if my lord treasurer were but a young man, I could find in my heart to love him for a husband before any man in England." The queen came here again in 1601, and was entertained by the fourth marquis for "thirteen dayes," and, as we are told, and can very well believe, "to the great charge of the sayde Lord Marquesse;" for, during her visit, Elizabeth received in state the French ambassador, the Duke of Biron, and a retinue of about twenty French nobles, and some four hundred other persons. It is recorded that the queen made this a subject of gratulation, saying she had done that in Hampshire that none of her ancestors ever did, neither that any prince in Christendom could do; that was, that she had in her progresses, in her subjects' houses entertained a royal ambassador, and had *royally* entertained him.

In August, 1643, Basing House, then very strongly fortified by John, the fifth marquis, for the king, was invested by the Parliamentary troops, and for a period of two years, broken, however, by occasional intermissions, was continually harassed by the enemy. During this time many assaults were made, particularly by Sir William Waller, who, within nine days, three times attempted to carry the house, but was repelled with great loss, and ultimately obliged to retreat. On their part, too, the besieged troops kept the besiegers in a constant state of anxiety and alarms by repeated sallies. After Waller's defeat the Parliamentary forces of Hampshire and Sussex were collected under Colonel Norton, who once more summoned the Marquis to surrender. The answer was, "If the king had no more ground in England than Basing House, he would maintain it to the uttermost." Famine now promised to accomplish for the Parliament what its soldiers could not; the distress of the garrison became so great, that in September, 1644, the Marquis, after having in vain sent messenger after messenger, to Charles, who was at Oxford, for relief, was compelled to send a last notice, that in ten days he must surrender if no assistance were given. For the time, however, the brave defenders of Basing House were saved by the courage and address of Colonel Gage, who, seeing their desperate condition, volunteered to convey them provisions. He succeeded in accomplishing this object, and in returning to Oxford, with the loss of eleven men killed, and forty or fifty wounded. This protracted defence would naturally draw the eyes of the nation upon the struggle, and make it imperative upon the Parliamentarians to succeed. Accordingly, the attack was next confided to the man who knew not defeat; Cromwell appeared before it, and the fate of the place was sealed. His force consisted of three regiments of foot and three regiments of horse; the garrison, according to Sir Robert Peake (its governor, under the Marquis), of three hundred fighting men, but, according to his antagonists, of about five hundred. The house was also defended by about ten pieces of ordnance. The result is best told in Cromwell's own brief business-like letter to the Speaker of the House of Commons, dated 14th October, 1645.

"Sir,—I thank God I can give you a good account of Basing. After our batteries placed, we settled the several posts for the storm: Col. Dalbeere was to be on the north side of the house next the grange, Col. Pickering on his left hand, and Sir Hardresse Waller's and Col. Montague's regiments next him. We stormed this morning after six of the clock: the signal for falling on was the firing from our cannon, which being done, our men fell on with great resolution and cheerfulness. We took the two houses without any considerable loss to ourselves. Col. Pickering stormed the new house, passed through and got the gate of the old house, whereupon they summoned a parley, which our men would not hear. In the mean time Col. Montague's and Sir Hardresse Waller's regiments assaulted the strongest work, where the enemy kept his court of guard, which, with great resolution, they recovered, beating the enemy from a whole culverin and from that work; which having done, they drew their ladders after them, got over another work and the house wall before they could enter. In this, Sir Hardresse Waller, performing his duty with honour and diligence, was shot in the arm, but not dangerously. We have had little loss: many of the enemies our men put to the sword, and some officers of quality; most of the rest we have prisoners, amongst which are the Marquis and Sir Robert Peake, with divers other officers, whom I have ordered to be sent up to you. We have taken about ten pieces of ordnance, much ammunition, and our soldiers *a good encouragement*," &c. The booty, thus delicately phrased, was indeed considerable, being valued at £200,000. It consisted of money, jewels, provisions, the magnificent furniture, and, in a word, the entire contents of Basing House. The provisions and furniture were sold to the country-people. What the soldiers left a fire destroyed,. caused by the neglect of the garrison in quenching a fire-ball thrown by the besiegers. In less than twenty hours, Basing House literally presented nothing but bare walls and chimneys.

The train next approaches the Basingstoke station, to the right of which the farmer will notice a beautiful ruin, being a fragment of the Holy Ghost Chapel—which is stated by Hassel to have been erected in the early part of the reign of King Henry VIII, by William, the first Lord Sandes, who obtained of that king a license for its foundation, and the establishment of a guild, by the name of "The Brotherhood, or Guild of the Holy Ghost." He endowed it with an estate, for the instruction of youth and the maintenance of a priest, to perform divine service. This brotherhood came to the crown in the 1st Edward VI, in pursuance of the act for the suppression of colleges, free chapels, &c. The inhabitants of Basingstoke, through the mediation of Cardinal Pole, the Pope's Legate and Archbishop of Canterbury, obtained of Queen Mary the restitution of this guild to its original state; which, having nothing belonging to it of a superstitious tendency, continued uninterrupted until the civil wars, when it was seized on, and the chapel and school shut up; until Dr. Morley, Bishop of Winchester, obtained the restoration of this estate, in 1670, to be applied to the purposes for which it was originally instituted. Camden says, the history of the prophets, apostles, and disciples of Christ, was very curiously described, with their several portraits, upon the roof; and that Lord Sandes, the founder, was buried here.

The Basingstoke station is about half way between Southampton and London. There is little in the town of Basingstoke which is particularly remarkable. The celebrated navigator, Sir James Lancaster, was a native of this place.

The farmer is now on the great chalk formation—and on this he will continue, until he is nearly close into the town of Southampton, for although, after he have passed Winchester, he will speedily find himself gliding amid the water meadows of the valley of the Itchen, yet, even here, he must remember that the great majority of these valuable meads have the chalk formation for their substratum. This great central division of Hampshire is pretty correctly described in the report, to which I have already referred, as containing about 454,000 acres. The higher portion has the appearance of an elevated plain broken into unequal portions, and intersected by hollows, through which numerous brooks and rivulets, rising in these upland tracts, find their way, for the most part in a southerly direction to the sea. In these hollows are found extensive tracts of meadow or pasture land, and almost all the houses of the inhabitants, the higher tracts being open and extensive sheep downs. On these valuable downs the predominating soil is a thin gray loam, resting on a firm bed of chalk. Particular places have what is provincially called a hazel mould, being light, dry, and friable, resting upon chalk rubble mixed with flint; this yields a short thick grass, affording very capital pasturage for sheep. A third soil met with in these downs is a black vegetable mould, resting on a substratum scarcely different from the preceding. A fourth soil is a strong and flinty loam, resting from one to eight and ten feet deep on the firm chalk: this is found chiefly on the flat summit of the lesser eminences, the acclivities of which give a fifth description of soil, consisting chiefly of decomposed chalk—this yields large crops of turnips and sainfoin. In lower situations the soil is a strong gray or red loam, rather difficult to till, but highly productive, especially of wheat. In numerous hollows, exclusive of the valleys that are traversed by the running streams, the soil is termed "shrave," formed of small flat flints, sometimes red pebbly gravel, combined with a small proportion of exceedingly tough loam, in a few places, with dry sand or small gravel. Of the deeper valleys (the farmer will see this soil in the Itchen valley, between Winchester and Southampton), the soil is a black vegetable mould, resting on calcareous loam; in these large chasms occur, which are occupied by masses of peat, which is consumed in the neighbourhood for fuel, and in which are found numerous trunks of large trees.

The rotation chiefly followed upon the pretty extensive farms which occupy the chalk formation between Basingstoke and Winchester, is chiefly a four or five shift. Sainfoin is here sown extensively, and this is allowed to remain one, two, or more years, according to the nature of the soil and the goodness of the plant. They are almost all stock farms.

"The ordinary rotation of crops in this district (as is well observed by Mr. W. Simonds, of St. Cross, in a recent obliging communication,) on the four-field system, is wheat, turnips, barley, clover, or grass. On the five-field the same rotation is followed, except that the grass-field remains two years, and is known in the second year as old ley. In many instances this old ley is divided into two portions, one being prepared for rape and turnips, the remainder continuing in grass, both upon being afterwards sown with wheat constituting one field.

"When sainfoin is grown, a portion of the farm is set apart for this crop, and it remains on the land for several years; the remainder of the arable being subdivided, according to its capability, as before stated. The light land farms vary in the proportion of corn; the best soils usually having annually half corn and half green crops; the next quality two-fifths corn and three-fifths green crops; and the inferior only one-third corn, and in some few instances even less. The main-stay of the farmers throughout this extensive district is their flocks, and a vast number of good lambs are annually sold at Overton Fair (Feb. 18), to the dealers from Buckinghamshire, Essex, Berkshire, and other fattening counties."

The great chalk formation, which the farmer passes over in the eighteen miles between Basingstoke and Winchester, is very accurately described by Mr. John Morton, in his valuable work on soils (p. 33), as extending "from Bridport in Dorsetshire, by Dorchester, Salisbury, Hungerford, Henley, Wycomb, Stevenage, Saffron Walden, Newmarket, Thetford, and Swaffham, to Docking, in Norfolk; along the north side of the London Basin, and crossing the Wash, it enters Lincolnshire at Burgh, and extends through South Binbrook to Barton; and after crossing the Humber it proceeds from Hull, through Beverley and Ganton, to Foxholes. That which forms the south side of the London

Basin begins at Dover, and extends through Chilham, Chatham, Farmingham, Merstham, Guildford, Farnham, and Winchester, to Salisbury. There is another branch, which forms the north side of the Isle of Wight Basin, beginning at Beachy Head, in Sussex, and extending through Shoreham, Arundel, north of Fareham, Bishop's Waltham, to Winchester. There is also a very small portion along the middle of the Isle of Wight. The greatest breadth of the chalk formation is about the place crossed by the South Western Railway, not far from Bishop's Waltham, in Hampshire, through Winchester and Whitchurch, to Wantage, in Berkshire, being upwards of forty miles. The water," continues Mr. Morton, "which comes from below the lower chalk, is pure and limpid, and delicious to drink. It contains carbonate of lime (chalk), and is of the best quality for water-meadows—hence one reason why the best water-meadows are in the chalk valleys. The openness of this formation keeps the whole of the surface very dry, indeed the whole of the chalk soil is dry, and there are no springs in it, except those that are thrown out by the clay below the lower chalk. Many of the valleys, which in the winter have rivers flowing in them, are left perfectly dry in the summer, owing to the openness of this formation, which allows the rain to run through it to the clay below. These valleys are called bournes.

The lower chalk forms a range of low hills, in front of the elevated range of upper chalk—the soil on the lower chalk is also called white land. It is without flint, and has fewer fragments of chalk in it than the soil on the upper chalk. This may be owing to a portion of clay and alumina in the lower chalk, on which the frost and the air have a great effect, and reduce it to a powder, or dissolve it into minute particles, so as to form, with vegetable matter, a chalky loam. This soil is a deep, strong, gray loam, a chalk marl, or a calcareous loam, of a white colour, from the quantity of chalk in its composition—white marl, malm, or marme, are names which are given to it in different districts. This is a much richer and more productive soil than that on the upper chalk, being stronger and more adhesive; it is better calculated, also, for the production of wheat, beans, and clover, but not so well fitted for turnips as the other; for, although it produces great crops, both of turnips and barley, the land is injured by the trampling of the sheep, in consuming them on the ground.

A large portion of the upper chalk is in downs and sheep pasture, and most of the remainder is under the plough; little of this, in the southerly counties, is enclosed, though almost the whole course of the lower chalk is under arable culture. There is a great portion of the upper chalk which is covered with either a thin coating of sand (the sand of the plastic clay, I think) or vegetable mould, in a state of nature, having been occupied as a sheep-walk for ages, and it has been kept in the same state, instead of being increased in value by the improved state of agriculture. The surface of the chalk formation, from being much undulated from the low level of the east coast in Norfolk and Suffolk, to the high hills of Hants, Wilts, and Dorsetshire, makes a considerable variation in the climate; in Norfolk and Suffolk the harvest on this formation is much earlier than in Hampshire, Wiltshire, and Dorsetshire. It is curious that the land on almost every other formation should be almost wholly enclosed, and that this should be almost entirely an open extensive plain; this is the case, whether you take Dorset, Wilts, Hants, or Berkshire, on the west, or Cambridgeshire, Norfolk, Suffolk, and Lincolnshire, on the east. Is this to be considered as the cause or the effect of the sheepfold, as a manure to fallows?

The open and porous nature of the subsoil leaves the surface perfectly dry; indeed, so much so, that some yearly expense is incurred by the farmers in making and repairing ponds for catching rain water for their stock, and wells have occasionally been dug through the chalk to a great depth for water. A great improvement would be made in the chalk district by enclosing the whole.

There are few objects of general interest worthy of notice between Basingstoke and Winchester. At that city, however, there is much to be seen, which will well repay the accomplished farmer's notice. He will here find a splendid cathedral, whose interior will well compare with by far the largest portion of the English cathedrals. In it, amidst many other remarkable persons, repose the remains of the celebrated Izaak Walton, the prince of fishermen, who, in this city, long the proud capital of England, passed quietly through the closing scenes of his tranquil life; following till the last the happy vocation of an angler, on the banks of the Itchen. Honest Izaak Walton evidently loved fair play in a fisherman, for he tells us in the fifth chapter of his Complete Angler, "And you are to know that in Hampshire, which, I think, exceeds all England for swift, shallow, clear, pleasant brooks, and store of trouts, they used to catch trouts in the night, by the light of a torch, which, when they have discovered, they strike with a trout spear, or other ways. In this kind of way they catch very many; but I would not believe it till I was an eye-witness of it, nor do I like it now I have seen it."

Winchester abounds with relics of antiquity. Recollections of the highest interest are connected with its history. It was here that in 827 Egbert was crowned, the first king of England. Alfred the Great resided here, and was buried in its Abbey of Hyde. Canute, too, resided in it; as did William of Normandy. Rufus was buried in its cathedral. By Edward the Third it was made a staple for the sale of wool. Queen Mary was married here to Philip of Spain. And in the reign of James the First the disgraceful trial of Sir Walter Raleigh took place within its walls. The cathedral (which contains an altar-piece by Benjamin West), the college, the Hospital of St. Cross, about a mile south of the city (founded in 1132, by Blois, brother of King Stephen), with many other objects, are well worthy of the traveller's notice. At St. Cross, all wayfaring travellers are entitled to freely receive, on application, bread and beer.

As soon as the train has passed through the deep chalk cutting at Winchester, the farmer will begin to perceive and to gradually descend to the level of the excellent water-meadows of the valley of the Itchen, which I next proceed to describe.

These water-meadows the farmer when he is on his tour will find the most ready of access for close inspection, either when at Southampton, by pursuing his way along the banks of the Winchester or Romsey canals, or, what will perhaps be still more convenient to him, if he stop at Winchester on his way (12 miles from Southampton), for the water-meadows of the Itchen valley extend perfectly close to the walls of that city—are, in fact, within half a mile of the railway-station. These meadows are copiously irrigated by the bright chalk waters of the Itchen, a river whose waters are, perhaps, the most copious considering the shortness of its course, of all the southern English rivers. The farmer who views the mass of crystal water, pouring under Winchester bridge, will hardly feel inclined to suspect that all this flood is the produce of a few springs which arise within seven miles of the city. When the farmer also notices the fertility diffused by the use of these bright waters—waters which contain such very limited proportions of either earthy, saline, or organic impurities—he will feel assured that it is an error to conclude that it is only very impure waters that are valuable for the use of the irrigator. It is, in fact, a mistake which most persons make, to suppose that even these bright and transparent waters are perfectly pure, and that they do not contain any substances which are the food of plants, for both these popular opinions have been proved to be erroneous. Thus the waters of the Itchen contain, in 10,000 parts, 2½ parts of solid matter, viz:—

	Parts.
Organic matter	0·02
Carbonate of lime (chalk)	1·89
Sulphate of lime (gypsum)	0·72
Muriate of soda (common salt)	1·01

Now, that these saline substances are absorbed by plants, from these kind of irrigation waters, has been shown by Dr. Madden (*Trans. High. Soc.*, v. 8, p. 687), who found in a gallon of the water of some springs issuing from the foot of the Pentland Hills, of—

	Grains.
Carbonate of lime (chalk)	4
Chloride of sodium (common salt)	10

But after this water had been passed over some meadows, it was found to contain these salts in diminished proportions. The same quantity of water then containing of—

	Grains.
Chalk only	2
Common salt	5

Such facts would appear to confirm the conclusions of some of the ablest cultivators, that the chief advantages of irrigation are attributable to the foreign substances with which the water is charged; although, as I have elsewhere observed, almost every farmer has a mode of accounting for the highly fertilizing effects of irrigation: one thinks it *cools* the land, another that it keeps the grass *warm* in winter. And this was Sir H. Davy's opinion—he thought that a winter-flooding protected the grass from the injurious effects of frost.

In these conclusions with regard to the theory of irrigation, I have found many excellent practical farmers concur. Thus, Mr. Simonds, of St. Cross, near Winchester, considers that the great benefit of winter-flooding for meadows is derived, in the first place, from the deposits made by the muddy waters on the grass; and, secondly, from the winter covering with water preventing the ill effects to the grass of sudden transitions in the temperature of the atmosphere. This gentleman is perfectly aware of the value of the addition of the city drainage of Winchester to the fertilizing qualities of the Itchen river-water, and of its superiority for irrigation after it has flowed past the city, having water-meadows both above and below the town. And he finds that if the water has been once used for irrigation, that then its fertilizing properties are so materially reduced, that it is of little value for again passing over the meadows: and so convinced is he, by experience, of this fact, that, having in this way long enjoyed the exclusive and valuable use of a branch of the waters of the Itchen for some grass land, a neighbour higher up the stream followed his example, constructing some water-meadows, and using the water before it arrived at those of my informant, who, in consequence, found the water so deteriorated in quality (though not sensibly diminished in quantity), that he once thought of disputing the right with his more upland neighbour. The experience of other irrigators tends to the same conclusion. In the best managed water-meadows of Hampshire the farmer does not procure annually more than three crops of grass; yet, in situations where a richer water is employed, as near Edinburgh, four or five are readily obtained.

Almost any description of grass, it is found, will flourish under proper management in water-meadows. Those whose soils consist of peat, resting on sand or on sandy loam, with a substratum of chalk or gravel, generally produce the meadow fox-tail, the brome grass, and the meadow fescue, on the tops and sides of the ridges. The furrows and sides of the drains are usually tenanted by the creeping bent, the hard fescue, the rough-stalked meadow grass, and the woolly soft grass. In those water-meadows whose soil consists of a sandy loam on a clay subsoil, the chief grasses are commonly the creeping-rooted soft grass, the crested dog's tail, the meadow barley, and the sweet-scented vernal grass. But some grasses change their appearance in a very remarkable degree when exposed under favourable circumstances to the influence of the flood-waters.

This fact is strikingly exemplified in the case of two small meadows situated at Orcheston, six miles from Amesbury, in Wiltshire, denominated, from their great produce, "the long grass meads." These, says Davis, "contain together only two acres and a-half, and the crop they produce is so immense, that the tithe of their hay was once sold for five guineas." Much discussion took place amongst the Wiltshire farmers as to the nature of the crop of these meads, before it was at last shown that the greatest part of their herbage consisted of nothing else than the black couch or couchy bent, the agrostis stolonifera, one of the worst of the grasses or weeds which haunt the poor ill-cultivated arable soils.

It is a correct conclusion of the farmer, that the grass and hay of water-meadows is not so nutritious as that of permanent pasture lands. The difference, however, is not so great as is commonly supposed. The late George Sinclair determined this experimentally, and he is no mean authority with regard to all that relates to the grasses. He obtained from the rye-grass *(Lolium perenne)*, at the time of flowering, taken from a water-meadow that had been fed off with sheep till the end of April, of nutritive matter, 72 grains; and from the same weight of this grass, taken from a rich old pasture, which had been shut up for hay about the same time, 92 grains; from the same grass from the meadow that had not been depastured in the spring, 100 grains; and from the same grass from the pasture which had not been fed off, 120 grains. All the grasses, in fact, where their growth is forced by the application of either liquid or solid manures, are found to contain nutritive matter in diminished quantities—this, too, was determined by Sinclair. From four ounces of a very rankly luxuriant patch of rye-grass, on which a large portion of cow-dung had been deposited, he obtained of nutritive matter, 72 grains: from the same quantity of the same grass, growing on the soil which surrounded this luxuriant patch, he obtained 122 grains; and, in a second trial, the same species of grass, on a soil entirely destitute of manure, afforded of nutritive matter, 95 grains; on the same soil excessively manured, the grass afforded only 50 grains. In these experiments, the plants were of the same age, and were examined at the same stage of their growth.—*Hortus Gram.*, 384.

With regard to the construction and management of water-meadows, there are many practical works of the highest authority to which the farmer has ready access, and in the following observations, therefore, I shall merely very briefly paraphrase the accounts given by Mr. Davis and others of the practice of irrigation in the southern counties—*(Stephens's Practical Irrigator—Brown's Rural Affairs*, p. 263—*Sinclair's Hort. Gram* , p. 382—*Davis's Wiltshire—Driver's Hampshire.)* In this, however, ever since the time when Davis wrote, there has been a great and steady improvement. The land is better levelled, the slopes more evenly preserved, the water-ways, aqueducts, and hatches better constructed; and in many of the more recent improvements in the valley of the Itchen, the sliding water-doors are regulated by a cogged wheel, turned by a moveable wince, so as to render them safe from alteration during the absence of the meadow-keeper.

The management of the Wiltshire and Hampshire water-meadows, as well as it can be briefly described, is as follows:—In the autumn, the after-grass is eaten off quite bare, when the manager of the mead (provincially the *drowner)* begins to clean out the main drain, and "right up the works"—that is, to make good all the carriages and drains which the cattle have trodden in, so as to have one tier or pitch of work ready for drowning. This is immediately put under water, while the drowner is preparing the next pitch.

In the flowing meadows this ought to be done, if possible, early enough in the autumn to have the whole meadow ready to catch the first floods after Michaelmas. The water then being the first washing of the arable lands on the sides of the chalk hills, as well as the dirt from the roads, is then thick and good; and this remark as to the superior riches of the flood-waters, is one that is commonly made in Berkshire and other parts of England. The length of the autumnal watering cannot be precisely stated, as much depends upon situation and circumstances; but if water can be commanded in abundance, the custom is to give meadows "a thorough good soaking at first," perhaps for a fortnight or three weeks, with an intermission of two or three days during that period, and continue for the space of two fortnights, allowing an interval of a week between them. The works are then made as dry as possible, to encourage the growth of the grass. This first soaking is to make the land sink and pitch close together, a circumstance of great consequence, not only to the quantity but to the quality of the grass, and particularly to encourage the shooting of new roots, which the grass is continually forming, to support the forced growth above.

While the grass grows freely a fresh watering is not wanted; but as soon as it flags the water must be repeated for a few days at a time, always keeping this great fundamental rule in view—"to make the meadows as dry as possible after every watering, and to take off the water the moment any scum appears upon the land, which shows that it has already had water enough."

Some meadows that will require the water for three weeks in October and the two following months, will not, perhaps, bear it a week in February or March, and sometimes scarcely two days in April and May.

In the catch-meadows, which are watered by springs, the great object is to keep the works of them very dry between the intervals of watering; and as such situations are seldom affected by floods, and generally have too little water, it is necessary to make the most of the water, by catching and rousing it as often as possible; and as the upper works of every pitch will be liable to get more water than those lower down, a longer time should be given to the latter, so as to make them as equal as possible. *(Davis's Agriculture of Wiltshire,* p. 125-7.)

In Berkshire they first flood their water-meadows about Michaelmas: these are situated principally on the banks of the Kennet. The first flooding they deem the richest in quality. This they keep on the land for about four days; then they dry it for about a fortnight, and then the water is let on for three or four days more. Those meadows which are the most readily dried are the most productive. There are none more so, in fact, than those which have a porous, gravelly, or broken flint bottom, from which the flood-water readily escapes, almost without drains. They begin to feed their meadows with sheep about the 6th of April, and continue feeding till about the 21st of May, when the meadows are again flooded for a crop of hay. The land is then flooded and dried alternately for three days until hay time.

The land in Wiltshire under this kind of management has been computed, and with a tolerable degree of accuracy, to be between 15,000 and 20,000 acres. Some considerable additions, however, have been made to the water-meadows of the district since this calculation was made *(Davis's Wilts.*, p. 122). About the same number of acres are formed into water-meadows in Berkshire, and a still larger number in Hampshire.

These water-meads are very commonly held by those farmers who hold the adjoining down or sheep-farms; and they are found to be, in connection with these valuable stock farms, exceedingly valuable, as yielding a supply of green food between the period when the supply of turnips usually terminates, and that of the upland spring-feed commences. For on these skilfully constructed meadows, their first crop is generally ready to be fed off long before the grasses of the arable farms have begun to make their first spring shoot.

These down farms adjoining the banks of the Itchen are principally resting immediately on the chalk formation; in fact, their soils are mainly composed of chalk. They are chiefly farmed on the four-course system, and are many of them (in connection with these water-meadows) worthy of the careful inspection of the farmer from other counties. These meads are a valuable description of grass land, which, as I have before had occasion to remark, may be readily formed in other districts, with considerable advantage to the cultivator.

These meadows extend pretty nearly to the Bishopstoke Station, from whence the Gosport branch of the South Western Railway diverges. At this spot the farmer may notice one or two of the best farms in Hampshire. Passing this station, at the distance of about five miles of a district more noticeable for the beauty of its scenery than its agriculture, the train arrives at Southampton.

The farmer will notice in this county a peculiar breed of pigs, of a white colour, called the Hampshire breed. It is a coarse flat-sided animal; but it fats very readily. The high character of the bacon produced in this county has been derived, according to the author of the British Husbandry (v. 2, p. 508), more from feeding the bacon hogs upon mast in many portions of the county, and from the mode of curing it, than from any inherent excellence in the breed. The old genuine Hampshire hog is by no means common, even in Hampshire; that of Berkshire has nearly superseded it, and there have been endless admixtures with the Chinese and Suffolk breeds, which have resulted in the production of a breed of pigs which are hardy, prone to get fat at an early age, and readily kept in good condition when in store. The chief peculiarity in the preparations of the Hampshire bacon consists in singeing, or "swaling" the hairs off, instead of scalding it.

The beautiful and rapidly rising town of Southampton,* the farmer will find situated on a peninsula, towards the head of the Southampton water. On one side of this peninsula, the bright, swift-flowing waters of the river Itchen reach the bay; on the other those of the Test.†

When at Southampton, various objects of interest will be readily accessible by the visitor. Within about two miles of the town, on the banks of the Southampton water, are the beautifully situated ruins of the abbey of Netley. They will be most readily found by the tourist, by passing over the Itchen ferry fly-bridge at the bottom of the town of Southampton, and by turning to the right, and keeping as close to the shore as possible—the ride is a very lovely one.

The abbey of Netley was founded by king Henry II in 1239, who placed in his foundation a small party of Cistercian monks (from the abbey of Beaulieu): these were, says Dr. Beattie, the most powerful and encroaching of all the religious orders. In point of revenue Netley abbey was one of the smallest of the monasteries. At the time of the dissolution it held only an abbot and twelve monks, and their possessions produced, according to Dugdale, £100 1s. 8d. The site was granted by Henry VIII to Sir W. Paulet, afterwards Marquis of Winchester, one of the most remarkable statesmen of his time. Queen Elizabeth was here in 1560. In the register of St. Michael's parish it is stated "the Queen's Majesty's Grace came from the castle of Netley, (a house close by Netley abbey, belonging to Lord Hertford) to Southampton, on the thirteenth day of August." The English monks, in selecting the sites of their houses, always endeavoured to secure a good supply of fish and game. At some distance behind the abbey of Netley the monks had two fish ponds, which are still in perfect preservation. The first is nearly square, bordered with underwood, and backed with flourishing oaks. The upper pond is still more picturesque, being perfectly overhung with fine trees. There are few traces of their gardening or their agriculture, but they obviously, and wisely, never neglected either their vineyards or their woods. The neighbourhood of Netley abbey was certainly more thickly wooded at former times than now. In the steward's book for the town of Southampton, under the date 1469, is an entry of two pounds three shillings and four-pence, paid to the abbot of Netley, for "a grove of woode bought by the maire for to make piles and legges by the sea syde." Horace Walpole was enraptured with what he terms "not the ruins of Netley abbey, but of Paradise. Oh, the purpled abbots; what a spot they had chosen to slumber in! The scene is so beautifully tranquil, yet so lively, that they seem only to have retired into the world." When he visited Netley, there were standing "fragments of beautifully fretted roofs, pendent in the air, with all variety of Gothic patterns of windows topped round and round with ivy." The last remains of the "fretted roof" have long fallen, and most of the windows have, since Walpole's time, been stripped of their ivy.

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* The population of the town, which in 1821 was 13,343, had increased in 1841 to 27,744.

† These are both celebrated trout streams: the Test, too, is almost the only stream in England where the angler finds the grayling.

It is hardly possible, in the limits of this paper, to even but slightly describe to the visitor all the numerous objects of attraction which present themselves within a few miles of Southampton. The Isle of Wight, to which there are steamers almost every hour—Portsmouth dockyard, with the Victory, Nelson's flag-ship, at anchor just before it —the New Forest (in which the spot is still shown where William Rufus was slain)—the race-course—the new cemetery—the docks—the Victoria pier—are all objects of interest, which will well repay the visitor for the time bestowed upon their examination.

The ancient Roman town of Clausentum was situated at Bittern, about a mile to the north of Southampton; a town which soon began to decline as the Saxon founded town of Antun or Hantun began to flourish, which is supposed by Sir Henry Englefield in his "Walk around Southampton," to have had the word south prefixed at a very remote period, from being to the south of the older town of Clausentum. "By a sort of retrograde conception not uncommon," continues Sir Henry Englefield "the river came, from the town seated on its bank, to be called in latter times the Hampton river, and the county itself Hantanscyre, as well as its more proper appellation of Hantescyre, and afterwards by a most preposterous confusion (probably suggested by the similarity of the name to Northamptonshire) the county was called the county of Southampton. When this last corruption was introduced, I cannot decide, but it is very ancient."

The celebrated Dr. Isaac Watts was the minister of a dissenting chapel in this town. Pope wrote, according to tradition, his Essay on Man in the grounds of Bevis Mount, a beautiful little park, which the farmer will pass on his way from the town to the show-yard; and Gray his Elegy in a Country Church-yard in the grounds and plantations at Ridgway Castle, on Pear Tree Green, a village on the opposite side of Itchen Ferry, about half a mile from Southampton. About two miles from the town, on the road to Redbridge, is the parish church of Milbrook, in whose church-yard lies buried Robert Pollok, the author of "The Course of Time."

Many historical recollections of the highest interest are connected with this town. It was here that Canute, king of England, when seated on the sea-shore, reproached his courtiers. It was from Southampton that Henry V, in 1417, embarked in his expedition to France, in the course of which occurred the Battle of Agincourt. The spot from whence "Harry of Monmouth" stepped on board the royal galley is called Kingsbridge Lane. By turning from the High Street, still past Mr. Aslet's coach manufactory, at about a distance of two hundred yards, commences the lane. It was here that Henry the Fifth discovered the conspiracy of the Earl of Cambridge, Lord Scrope, and Sir Thomas Grey.

The following are the chief Arrangements of the Week.

Thursday, July 18.—Last day for receiving Implements, Wheat, Barley, Seeds, &c., to be exhibited in the Implement Yard, and arranged by the Stewards for the Judges' Inspection.

Tuesday, July 23.—The Implement Yard open to the public from eight in the morning till six in the evening, at 2s. 6d. each person. The public exhibition of the working of the Implements to take place at Mr. C. Gater's, Swathling Farm, at twelve o'clock. Cattle received in the Show Yard from eight in the morning till four in the afternoon.

Wednesday, July 24.—The Judges inspect the Stock, and award the the Prizes. The Implement Yard open to the public from eight in the morning till six in the evening—admission, 2s. 6d. Council Dinner in the Victoria Archery Rooms, at five o'clock, when the

Judges' award of prizes (with the exception of those for Horses) will be read. Doors open at four.

Thursday, July 25.—The Cattle and Implement Yards open to the public from six in the morning till one o'clock in the afternoon—admission, 2s. 6d.; and from one to six in the evening at 1s. Dinner of the Society in the Great Pavilion at four o'clock. Doors open at three.

Friday, July 26.—Cattle Yard open at seven. Sale to begin at nine for ten precisely.

Stewards of Departments.

Cattle	Hon. Capt. Spencer, Mr. Druce, Mr. H. Gibbs.
Implements	Mr. Miles, Mr. Shelly.
Finance	Col. Austen.
Sale of Tickets	Mr. Wilson.
Receipts and Admission to Show Yards	Mr. Barker.
Pavilion and Council Dinners	Col. Challoner.
Ladies' Gallery	Mr. Etwall.
General Arrangement of Show	Mr. B. Gibbs.

By the 15th Regulation of the Society, all persons admitted into the Show Yard, shall be subject to the rules, orders, and regulations of the Council.

N.B.—Sale of Tickets for the Pavilion Dinner, to Members of the Society at the Pavilion, from Nine until Four o'clock on Wednesday, the 24th of July, and from Eight until Three o'clock on Thursday, the 25th of July,—Price 10s. each.

In concluding these imperfect notices, I have only to urge upon the attention of the farmer from distant counties, the importance of examining some of the chief objects in the agriculture of Hampshire, to which I have thus briefly alluded. It is to such purposes that these brilliant meetings are devoted, and fortunately for the accomplished farmer and the general visiter, the society have never yet located themselves in any district possessing nearly such scenery, such a numerous mass of objects of general extent as in the present year, so that I have little doubt but that the meeting of Southampton will long be remembered in the reminiscences of agriculture, as being far more brilliant than any of its predecessors.

14, GRAY'S INN SQUARE,
May 21, 1844.

COMMON SALT AS MANURE, &c.

At a late meeting of the Bromsgrove Farmers' Club, Mr. H. F. Fardon read a paper on the subject of manures. After speaking generally of the action of manures, he brought forward some very interesting matter on the use of salt. Common salt, he said, has lately attracted much attention as a manure, and upon light soils it is very valuable. I have received two letters on this subject, containing the actual experience of two thoroughly practical agriculturists. The first I received from Mr. J. Wilson, of Aston, Claverly, near Wolverhampton; the second from Mr. Matthews, of Park Hall, near Kidderminster. The following are extracts:—Mr. Wilson says,—"I have used salt for agricultural purposes many years with success, and am thoroughly convinced of its utility. I am now applying it for barley on all my lightest soils containing any considerable portion of vegetable matter, at the rate of five to six cwt. per acre; also on my wheat of the autumnal sowing on the same description of soils, and at the same rate per acre. I did so last year with great success. I gave it, as in other years, a fair trial, by leaving a strip in each field without the salt, which in every case plainly showed itself in the months of May and June, particularly in the wheat. We consider our land to bear white wheat better than red, but in the latter end of May and the beginning of June it is very much more subject to the red dust, a disease very detrimental here, which is completely obviated by the use of salt, and the sample is much finer, the yield better, and much freer from light or diseased grains when salt is applied. I last year salted a 20-acre field for barley, at the rate of 6 cwt. per acre, leaving a strip the whole length of the field without; at harvest, the greatest novice might have discovered the difference, the salted being very superior in sample and colour. I last week winnowed 300 bushels of it without a single bushel of light—a circumstance which does not occur with us this year where salt was not used. This was grown on land which ten years ago was considered not worth cultivating, but being wonderfully improved by the use of bones and salt, it now grows as good turnips and barley as any land I have. I think the Bromsgrove Club will approve of salt, as recommended for trial, in fixing the ammonia in manures. I use it for that purpose very satisfactorily." Mr. Matthews writes as follows:—"If salt were found only on the shores of South America, and imported here at the price of guano, I think it would be in more general use than it is at present. Its value no one attempts to question, but nevertheless its application is very limited. My experience of its effects is confined to light soils; and upon such, I know of no article so greatly and so generally beneficial. Its copious use to every description of stock I regard as indispensible. For turnips, barley, clover, and wheat, it is equally beneficial, used either as a top-dressing or worked into and incorporated with the soil. Nor is it of value only as regards an *increase* of produce, for I have always found the *quality* greatly improved where it has been used largely. The fold-yard should have an abundant supply; it should be applied at the least once in every week. Upon grass lands, whether upland pastures or watered meadows, I have found its use alike advantageous. I have generally applied it in the form of a compost with soils, but I do not consider this as necessary. Last spring I dressed a meadow of five acres with salt and soil, putting on about 30 *cwt. per acre of salt;* and the effect was most convincing both in the hay crop and aftermath. The sheep and cattle I turned into it had access to an adjoining meadow, and their preference for that which had been salted was really ludicrous; they could not be induced to leave it when it was as bare as a common, while the other meadow had abundance of grass upon it. Pray do the community the good service of urging the more general use of salt, especially in the rye-land district. I am satisfied that every man whom you can prevail upon to adopt its use largely, will ultimately thank you for the good you confer upon him." These letters, Mr. Farndon said, afford practical evidence of the value of salt, and I hope farmers on light land will try it. Salt may operate in fixing ammonia by converting the volatile carbonate of ammonia into the fixed muriate, being converted itself into carbonate of soda, a valuable constituent of manure. Salt may also benefit light dry soils by its attraction for water, and it has the effect of rendering herbage more palatable to stock.

Surprise was expressed at the statement of Mr. Matthews that he had used salt at the rate of 30 cwt. per acre. It was considered that such a quantity would generally prove highly injurious, and that 5 to 6 cwt. per acre was the utmost that should be used.

Mr. Maund said there was one drawback to successful experiments in manures—that of the adulteration to which they were subject. He mentioned an instance where an article, *supposed to be pure guano, was found to contain only three parts in a hundred, genuine.*

After some further conversation, Mr. John Holmes, of Elmbridge, moved, and Mr. Tobay, of Park Hall, seconded the following resolutions:—

That in the management of farm-yard manure it is highly important that the escape of any gas or liquid from it should be prevented, and that the more perfectly this is accomplished, the more valuable, other circumstances being the same, will the manure be. That to promote this end, it would seem desirable to form the bury on a stratum of soil which should absorb any liquid flowing from it, and to cover the surface also either with a layer of soil, or with some substance capable of fixing the ammonia given off. That for the same end it would also appear desirable that buries of manure should be formed under cover, proper moisture being supplied, though farm-buildings, as at present constructed, rarely offer convenience for this. That from the evidence of Mr. Wilson, Mr. Matthews, and Mr. Smith, kindly communicated to the club, it appears that salt has been found extremely valuable as a manure on light soils, the quantity usually applied *not exceeding five or six cwt. per acre;* and also that it is extremely advantageous when supplied to live stock, in preserving their health.

Italian Rye-Grass is extremely valuable, as well for its earliness, as for its great productiveness. It is consumed with avidity by all kinds of stock, and there are now few farms of any extent without a supply of it.

The Italian rye-grass, although valuable as an early grass, retains its powers of growth to a late period of the year, as many as four successive cuttings of it having been taken during one season. A patch of this grass, which had ripened its seeds and was cut in November, on the 24th of December had attained a length of above a foot, notwithstanding some sharp frosts had intervened; thus showing a superiority over any other grass in producing winter herbage.

If sown on wheat stubble immediately the corn is removed, say early in September, it will be fit for soiling in May, and yield nearly as good a crop as if it had been sown in the previous spring, provided the land is dry and in good condition, and that the stubble has been well worked. A little manure at the time of sowing will be of great use in forwarding the growth and increasing the yield of the crop.

Doubts have heretofore been expressed as to the duration of the Italian rye-grass, but these no longer exist; and the best authorities are now agreed in considering, that it has fully established its character as a perennial plant. About three bushels of seed are required for the statute acre; but it is necessary that the land should be well worked.—*The Farmer.*

AGRICULTURAL FACTS.

By Mr. **TOWERS**, Member R. A. S. and H. Society of London.

It will be interesting, perhaps instructive, at a period like the present, to resume the subject of meteorology. In a fickle and changeable climate like that of Britain, it may be questioned whether any series of observations can furnish data worthy of reliance, but there are seasons when a comparison of facts will lead to a knowledge of local effects, and suggest to the cultivator the best methods of amelioration. It is quite true, that while one district appears to suffer from excessive drought, another, and that not remote, is visited by frequent showers. Thus, in February last, when our registers pointed out profuse and deep falls of snow on the east side of Berkshire, near the Thames, those of Norfolk scarcely alluded to the meteor: there had been no depth of snow worthy of record. Referring to our tables, we perceive that the wind had blown from some western quarter during at least twenty-four days of the month of February. In Scotland also, a gentleman whose opinion in agricultural affairs few could dispute, assured us, that so open, mild, and snowless had been the three winter months, that the labourers had ploughed the land, and actually reposed for want of work, before the middle of that month. In March, however, snow-storms occurred; while in the south we were deluged with rain. Had the wind been north-easterly, Norfolk and the east coast would have felt the winter and its concomitants. As it was, they were favoured.

We must now look at March as the criterion month of the summer.

February, as was before stated, had been seasonably wet; it sustained its true character to the end; but March deteriorated. It commenced with a fine day; yet, during the first week the weather was cold, bleak, and rainy, with some hail, and frosts at night. On the 6th morning the thermometer marked 23°—i. e., 9° of frost—the coldest of the month. Thence, to the 16th day, the wind was fluctuating, and the weather fickle in the extreme. On the 16th, however, the current became north-easterly, and introduced the critical period of the *vernal equinox*.

The barometer rose to 30 inches (usually the point of "*fair*") on the 19th; and on the 20th the sun entered the ascending, or spring sign of Aries, about noon. The wind had wavered all the day, and the weather assumed a doubtful aspect; a true equinoctial gale, however, sprung up in the north-west, with a brisk hail shower, about 4, p.m., and veered to full north; the sky cleared, and a beautiful day followed, with a rising glass. Thus the prognostic was favourable, even according to the late Mr. Kirwan, who observed, that if there had been no preceding gale, and one arose on or about the 21st, the succeeding summer would be dry four times out of five. Our own table, during twenty two years, affords but two exceptions to the rule which states that a *dry northern equinox generally foretels a corresponding summer or winter.*

The weather maintained its changeable character till the 26th, when a decided north wind set in, the mercury continued to rise to the end of the month, the sky became clear, and the sun shone without a cloud.

At this period every crop on the ground was healthy, and sufficiently vigorous, and ploughing advanced under most favourable auspices. The averages of the thermometer on Maidenhead Thicket were—minimum 35·6, maximum 48°.

April throughout (with the exception of the 12th, when a gentle rain fell for 5 hours,) may be styled a month of splendour. The power of the sun was amazing. The lowest maximum at 2 o'clock was 53°, on the 13th, the highest 73°, on the 26th. The nights were generally cool; the total average being 39°. Frosty rime occurred about four times, and we had a frost of 5° on the night of the 7th, or about sunrise of the 8th.

This blaze of sunlight dried the earth too much and too rapidly for the barley; for in some instances where the ploughed land had turned up cloddy, it became so hard, that neither roller nor any other instrument could reduce it to that condition of fineness which is so desirable. There was still ground moisture, at a considerable depth, but the germinating plant could not reach it; however, we must report the beautiful condition of the crops; the autumn and spring wheat, the oats, and barley. The farmers themselves are satisfied, though they see and feel that clover burns in dry and poor spots, and that moderate genial showers would be a great blessing.

May, to the 7th—a week of unparalleled fine weather—heat increasing; clover had burnt, in patches, and on the 9th the maximum was 73°. In Berkshire the barley continued to appear beautiful and close in plant. A few slight showers occurred between the 7th and 11th, but were by no means general. In the neighbouring counties of Buckingham and Herts the corn does not appear so beautifully healthy as in Berkshire, but all trees and shrubs were verdant and forward beyond their wont. It was worthy of remark, that the ash trees were far in arrear of the oak, which latter abounded with the excrescence called the *oak-apple* by the end of the first week! Some ash, and the wych-elm, had scarcely developed their buds. The season furnished altogether a contrast to that of the year 1843.

Since our last an opportunity occurred to converse with a gentleman thoroughly versed in practical agriculture, and accustomed to inspect its produce, who had witnessed the exhibition of Mr. Campbell's samples of wheat, barley, and oats, at the Dundee show of August, produced from seeds that had been steeped in his chemical solutions. Oats had the pre-eminence: barley was inferior, though much finer than that grown under ordinary culture; but wheat was the least affected. Numbers, we understood, were trying experiments with the steeps in Scotland, to an extent which would serve as a test. In England trials have been made, but too late to determine anything concerning oats and wheat. The English farmer is very shy of novelties: he lets what he considers "*well* alone," so as to bar experiment; hence he is ever a doubter, and must be content to remain uninstructed.

So far as opportunity has been afforded us personally to bring the merits of Mr. Campbell's preparations to proof, a variety of seeds have been steeped during the month of April. We commenced with wheat and barley, employing the same ammoniacal salt to each, agreeably to the printed directions. The seeds remained in the solutions above 48 hours, were then removed, and dried upon blotting paper. They were then sown in a box, twelve seeds of steeped wheat, side by side with twelve unprepared seeds of the same sample; and seeds of barley, twelve of each, exactly under similar circumstances. Two or three seeds of the steeped wheat failed, either from defect of the seed or some grub in the soil: all the rest of both kinds germinated early and strongly. During the dry weather a little water was occasionally given in the evenings. It was thus ascertained that the steeping was perfectly innocuous; yet, at the same time, it became evident that the barley profited more than the wheat; and this accords with the report of our friend who had been at the Dundee meeting.

During the subsequent growth of the plants to the 15th May, those from the steeped seeds appeared the more healthy, and tillered more abundantly.

Garden peas (Knight's dwarf green) were steeped more than twelve hours in the preparation for that legume: the seeds swelled and became so soft and pulpy, as to make it requisite to carry the process no farther. They were dried in a wicker sieve; then sown in drill, and vegetated, although the weather continued sunny and parching; but, for want of moisture peas could make but little way, and watering is at all times worse than useless, if it be not regularly performed to profusion.

Cabbage seed, steeped twelve hours in a weak solution of nitrate of potassa and sulphate of ammonia, equal proportions, of which mixture a drachm, or 60 grains, is enough for four ounces of water, vegetated in three or four days.

Final results of any experiment cannot be traced till the plants have completed their growth; but it is quite certain that no injury is done to the seed if the solutions be prepared for *corn* according to the printed directions, and applied cold; for *garden seeds* they had better be half the strength. It would be exceedingly desirable to have the turnip expedited in its growth, so as to bring the plants into the rough leaf with the least possible loss of time; and a letter from Mr. Campbell states that he believes *the germination will be promoted by steeping.*

It might be too late, of course, when this article shall appear in print, to try an experiment with Swedes in the field; yet any one may experimentize in the garden, provided he procure an ounce or two of pure *sulphate of ammonia,* saltpetre, and nitrate of soda; other articles are not required. All the seeds of corn contain nitrogen, and therefore a nitrogenized (azotized) steep is required for them. Plants of the cabbage family demand the same; therefore, as the three chemical salts above named contain nitrogen as one of their ultimate elements, it is highly probable, by parity of reasoning, that any or all of them might prove available. It will be needful to attend to the proportions, and not to exceed those directed by Mr. Campbell, and also to avoid too long an immersion. Thus, taking *twelve* measures of water to *one* of the *saturated solution,* we may state that 1 drachm, or 60 grains by weight, is amply sufficient for 12 fluid drachms of cold soft water (1½ fluid ounce); and the time of steeping might vary from 16 to 60 hours: thus, "barley does not succeed if steeped beyond 60 hours—rye-grass and other gramineous seeds (not cereal) do with from 16 to 20 hours." And we may add—cabbage and turnip seed 8 to 12 hours. The water should be about 60°, (i. e., cold, in warm weather,) and the seeds ought to be drained and made perfectly dry, by spreading them abroad in a shady place, under a current of air. These minutiæ appear embarrassing to those who are not accustomed to such operations; but they are, like all other practices, easy when once successfully performed.

The rationale of these steepings is, as was before said, to be found in the adaptation of substances congenial with the elements of the seeds to be medicated. The theory is sound, though in practice the results may be uncertain; it is, therefore, highly desirable and just that the agriculturists of the empire should bring the enquiry to issue, and especially as the cry (in South Britain at least) of distress, and want of remuneration is very prevalent, and the means offered as a remedy are of such ready attainment. It is the more essential to impress the consideration, inasmuch as we find in the last published *Transactions* of the Highland Society the following article, which proves that the subject of steeping has attracted the notice of those in authority.

"*Premiums offered for steeping seeds.*"—Page 238, *March*, 1844.—"Considerable attention having lately been drawn to steeping of seeds, the Society is desirous that the subject should be fully investigated; and it offers the gold medal for the best, and the medium gold medal for the second best report on the subject.

"The steeping of seeds may have for its object either to promote the immediate and general growth of the seed, in which case the nitrates of potash and soda, or sal ammoniac and sulphate of ammonia, chamberley, or weak gas liquor, would be most likely to be efficacious; or it may be intended to *supply some substance which the plant requires*, but which the seed does not contain in sufficient quantity."

From this quotation it is plain that the pretensions of Mr. Campbell have been appreciated, and his theory considered worthy of serious attention. What that theory is, we have before endeavoured to determine and impress; and, therefore, it must be gratifying to perceive that one of the most respectable and influential societies has advocated extensive trials of the materials which appear to contain many of the elements of the seed.

There is one passage, however, of *the notice* which remains to be criticised. After alluding to modes of mixing materials "which are capable of supplying those inorganic compounds which the seed naturally contains," it is suggested that the wet seeds be dried with *lime*, with gypsum, or with carbonate of magnesia! Mr. Campbell, in his "Directions" for making and using the liquids, thus expresses himself, "After steeping the proper time, the grain is to be taken out, and spread to dry under a current of atmospheric air (not by heating).

"The grain must not be kept in a wet state after being taken out of the liquid, but the drying must commence immediately.

These directions are plain and simple; they cannot be misunderstood; neither if strictly attended to, can any bad consequences ensue, for the grain dries rapidly in cool air without change of bulk or colour, to any extent; but when we are instructed to use powdery and alkaline substances, under the idea of *absorbing* the fluid, the question becomes one of chemistry. Almost all the materials used to produce the finest samples at Dundee were chemical salts of ammonia; and Mr. Campbell, we opine, is too good a chemist to direct an active re-agent to be employed which would peril his entire experiment. Take, for instance, the two ammoniacal salts—the sulphate and muriate—and apply powder lime to either, and then mark the effects. The lime, by its affinity for the acid, would attract and seize it, thereby liberating *caustic ammonia* so strong in odour (being a volatile gas) as to be almost unbearable if produced in quantity. We believe that not one grain thoroughly imbued with an ammoniacal solution would retain its vitality for ten minutes after the application of lime.

The other powders are more innocuous, but, being perfectly useless, are by no means to be recommended; for if it be true, as asserted, that the steeped grain, when rendered perfectly dry by cool air, will keep sound any length of time, it would be anything but wise to tamper with seed so impregnated, at the risk of compromising its efficacy, or even certainty of the material.

In order to ascertain the precise effect of any application, whether it be in the form of a steep for the seed or of a manure for the growing plant, it should be simple and uncombined; otherwise it will be very difficult to conjecture the agent which may have produced any perceptible result. It is very common to recommend a compound admixture of manures, animal, vegetable, saline, and inorganic; but this implies ignorance, and ignorance should not be indulged and fostered. It is by research, by profound experiment, and by the unwearied induction from facts, that chemists and mechanicians have attained that precision which characterises the scientific pursuits of the present day.

Simplicity is not a term that we attempt to employ in the abstract, for no such thing exists in any of the appliances of agriculture; but if we are to combine such agents as muriate, nitrate, and sulphate of *ammonia*, of *potassa*, and *soda*, and then to re-act upon them by the affinity of chemical agents, what result can we expect? what inference can we arrive at? The thing is impossible; therefore we would suggest, that in steeping seeds known to contain *nitrogen* (for the other ultimate elements—oxygen, hydrogen, and carbon, are sure to be present) some *one* nitrogeneous (i. e., azotised) salt be employed. In the salts with an ammoniacal base, the nitrogen will be referred to that base, because *ammonia* is constituted of hydrogen and nitrogen; unless, indeed, the salt be *nitrate of ammonia*, in which case nitrogen is combined in both acid and base; but in salts like the nitrates of soda and potassa the nitrogen exists only in the acid.

As, moreover, in direct experiment Mr. Campbell produced his best wheat by *sulphate of ammonia* alone, and again states in plain terms, that "the very superior specimens of tall oats, averaging 160 grains on each stem, and eight available stems from each seed, were prepared from sulphate of ammonia. The specimens of barley and bear were prepared from nitrate of ammonia. The former had an average of *ten* available stems, and each stem an average of thirty-four grains in the ear; the latter an average also of ten stems, with seventy-two grains in the ear." Does anything further remain to be urged?

If one chemical azotized salt did, bona fide, produce *samples* so much superior to other *samples* grown without steeping, we have ample ground for carrying out experiments with an ammoniacal salt upon the farm. We know, in fact, several who have steeped barley, and the seeds germinated, though not six hours of rain have fallen upon the cloddy and parched surface. The season for turnips is also at hand, and that for wheat is not very remote.

If it be urged, that what is done in the small way, and prepared expressly for "exhibition," cannot be effected in the field, we still say, try, and prove for yourselves. If you can save one-fourth of the seed, and then reap only half as much *more* grain than is produced without medication, will not the profit be all the greater? Why not, then, adopt the suggestion of the Highland Society, and thus either prove, or at once disqualify the theory? But, whatever be attempted, and whatever the material employed, let it be pure and unmixed, so that the quality of the seed and its medicament may be clearly understood, otherwise the result will be ambiguous, and its agent inappreciable. Every item, in a word, ought to be registered, and the progress repeatedly observed and written down. We hope, however, to recur to the subject of wheat prior to the season of steeping and sowing.

As to turnips, the simple object is to stimulate and quicken germination; and only 12 hours' immersion are directed for rape and turnip seed. Any one who doubts should soak a quarter of an ounce of the seed for the specified time, dry it on a cloth first, then in the air, and sow in a box, or large garden pot. If the seed germinate speedily, one proof will be substantiated; and then by a little watering (because such vehicles retain no moisture for any length of time) it would soon appear whether the steep induces rapidity of development of the seed, when compared with another portion of the same seed unsteeped, and sown under similar circumstances.

To conclude as we commenced—the weather to the 16th May continued arid and brilliantly sunny. Vegetation waits for a little rain, but otherwise is rich and verdantly healthy. On the evening of the 15th the mercury stood at its maximum—far above the mark "Fair,"—i. e., 30 inches 36 cents : the air cold, brisk from north-east. It began to decline, and receded three-tenths of an inch : thus we find the first promise of a hoped-for change ; though we may fear a superabundance, after a drought of 50 days ; a phenomenon which has scarcely occurred since 1825.

Improvement is apparent everywhere ; and not to say more of the beautiful corn, we may add that the fruit trees, after being garlands of loveliness, have set their fruit to an extent rarely witnessed ; and should gentle rain and warm gleams coalesce, the season will be remarkably early.

May 16, 1844.

ON THE DISEASES OF WHEAT.

Royal Institution, May 17, Lord Prudhoe, President, in the chair. The Rev. E. Sidney gave a communication "On the Diseases of Wheat." Mr. Sidney commenced by stating, that though these evils were but too well known, their causes, as well as the mode of remedying them, had as yet been little investigated. Mr. Sidney then mentioned, that the diseases of wheat arise, either from parasitic fungi, from insects, or from a yet unascertained cause. Of the parasitic fungi, the *Uredo fœtida*, or caries, commonly called *bunt*, or *pepper-brand*, attacks the grain, of which it fills the interior. It is recognized by its disgusting odour ; it is supposed that one grain thus diseased, may contain 4,000,000 of its spores, each $\frac{1}{1600}$ of an inch in diameter. These burst, and emit a cloud of sporules, which are absorbed during the germination of the seed. As these sporules adhere to the seed by an oily matter, the dressing by which they are cleansed should be alkaline, so as to convert this adhesive substance into soap, and then wash it off. Mr. Sidney recommended for this purpose lime, matters containing ammonia and potass, instead of sulphate of copper or arsenic. The *Uredo segetum*, the fungus next named, attacks the flower and its pedicel ; it is called *smut*, or *dust-brand.*

Its spores are smaller than those of the *Uredo fœtida*, and it has no odour, but cattle reject straw infected by it; clean seed is the best remedy, but its extreme minuteness renders it difficult of removal, the spores being $\frac{1}{2800}$ inch in diameter. Mr. Sidney then described another fungus, *Uredo rubrigo*, or *Uredo linearis*, commonly called *robin-rush*, *red-rag*, or *red-gum*, as attacking chaff, scales, and leaves; he stated, however, on the authority of Professor Henslow and others, that this fungus is only an imperfect form of *Puccinia graminis*, or *mildew*. This fungus appears in the straw in *sori*, or patches, consisting of multitudes of pear-shaped spores filled with sporules. As these patches originally appear in the cavities beneath the stomata, it is inferred that they enter them with the moisture they inhale, but are not taken up by the roots. As a remedy of this destructive disease, Mr. Sidney proposed the amendment of the soil, where too retentive of water, to air it well by exposure and freedom from weeds, to repress an over-luxuriance of vegetation, not to manure immediately before wheat, and to select early varieties in places liable to mildew. In closing this part of his subject, Mr. Sidney demonstrated, from a highly magnified drawing of the *Æcidium berberidis*, that it was a vulgar error to imagine that the corn-mildew was produced by the berberry. But he admitted that the wheat might be injured by the odour of the berberry flowers, or by the ingredients of a soil favourable to that plant. The lecturer then proceeded to injuries inflicted on wheat crops by insects. He noticed, that about 9 o'clock in the evenings of the month of June, myriads of a two-winged fly, the *Cecidomyia tritici*, or *wheat midge*, appear on the wheat flowers. The larvæ of this fly cause abortion, so that the grain ceases to advance. It is imagined that the chrysalis is bred on the straw-heaps before the barns. A check to the rapid increase of this fly is providentially provided in two or three species of ichneumon, which feed on the chrysalis; still it is sufficiently abundant to destroy sometimes as much as one-third of a wheat crop. The remedy against this is in the use of a sieve of sufficient size to let dust and chrysalides through, and then to burn the refuse at a distance from the barn. This process affords the additional advantage of destroying many injurious seeds. Mr. Sidney mentioned that this plan had been successfully tried for two years on a large farm in Norfolk. That wonderful insect, the *Vibrio tritici* (ear-cockle or peppercorn) was next mentioned; it attacks the grain. These extremely minute animalcules enter the stalk from the earth. They turn the grain first green, then black, and round, while the husks and chaff open, and the awns become twisted; 50,000 of these *vibriones*, according to Professor Henslow, weigh a grain. They will live six or seven years dried up in the seed. The remedy suggested is to steep the seeds in water, hot enough to destroy this insect, but not to injure the germinating power of the seed. The last disease noticed was that of the *ergot*: it is common in rye, but more frequent in wheat than is generally supposed. All that can be said of it in the present condition of our knowledge is, that it is a monstrous state of the seed, which, in that condition, burns like resin. The *ergot* of wheat is more intensely poisonous than that of rye, the qualities of which are well known. It grows freely in wet clayey soils, and was last year prevalent in darnel and several other grasses. Hence the diseases in cattle may have originated. Mr. Sidney's discourse was illustrated by diagrams, executed by Professor Henslow, and by examples of the various morbid appearances of diseased wheat.

CIRENCESTER AGRICULTURAL COLLEGE AND EXAMPLE FARM.

An influential meeting was held on the 29th of April, at Cirencester, Gloucestershire, in furtherance of a plan recently projected for the establishment of an Agricultural College and Example Farm. Many of the first agriculturists of the Cotswold district were present, both landlords and tenants, amongst whom were Earl Bathurst, Lord Sherborne, Earl Ducie, Ambrose Goddard, Esq., T. H. S. Sotheron, Esq., M.P., Sir J. Paull, D. Ricardo, Esq., Professor Daubeny, and many others. Lord Bathurst took the chair, and Mr. Brown, of Cirencester, to whose exertions, his lordship stated, it was chiefly owing that the scheme had reached its present position, read the Report of the committee of the Cirencester and Fairford Farmers' Club, which had been appointed to carry out resolutions passed by that Club last year, on the subject of Agricultural education.

The report, which detailed the reasons which had actuated this society in taking measures for the establishment of an Agricultural School, and which specified the circumstances on which the success of the scheme depended, having been read, the Earl of Ducie rose to propose the first resolution, which referred to the propriety of establishing an Agricultural College. His lordship said, that upon the subject of education a great change had taken place in opinion within the last few years; the farmers had begun to see more clearly than before—at least such of them as had sons—the necessity for establishing an institution like the one proposed. He did not suppose that there were any agriculturists present who did not contemplate that one or two of their sons should follow farming as a profession. But how did they propose to get them educated? At present they were compelled to send them to school, where they, no doubt, learned much that was useful, but not in the line of life in which they were destined to work their way in the world; the only opportunity they had of teaching them their business, was when they returned home from school, perhaps at 14 or 15 years of age; farmers then instructed them in what they knew themselves, or, it might be, placed them, with a large premium, with some neighbouring agriculturist, of whose practical and scientific knowledge they entertained a higher opinion than of their own. But no man could teach more than he knew himself; the person to whom they sent their sons might know a great deal—he might be a good farmer and breeder of stock—but still unable to communicate the degree of scientific knowledge which is necessary for the successful prosecution of agriculture; and although a farmer qualified in all respects might be found, was it to be supposed that he could accommodate as many pupils as required his instruction? In all points of view, therefore, it was necessary that they should support this college, which would afford them an opportunity of giving their sons a sound practical education on all subjects relating to their occupation.

Mr. Kearsey, tenant-farmer, of Tarlton, seconded the resolution. He sincerely hoped that an institution which was calculated to be so extensively useful would meet with the necessary support: if it did, he was sure that those who came after would be grateful to them.

Sir John Paull moved the second resolution, which named a committee to determine on the plan of a suitable educational institution, and to carry the design into effect. He said it frequently appeared to him as a most remarkable circumstance, that farming was the only thing which was supposed to come without education. If a young man were put to any other trade, either ironmonger, grocer, lawyer, or surgeon, it was deemed requisite that he should be trained to that particular vocation in which he was to exercise his talent; but a man hesitated not to take a farm without previous instruction, presuming that, being the son of a farmer, it must, as a matter of course, follow, that he can be a farmer likewise.

The resolution having been seconded, Dr. Daubeny, Professor of Rural Economy at Oxford, rose to propose the third resolution, that a subscription be entered into to defray expenses. During his travels on the Continent, he had visited several colleges in France, Germany, and

Italy, established by the respective governments for the instruction of youths intended for agriculture, and, from their general distribution, was led to infer that the necessity of imparting an education to young farmers adapted for their future occupation, was felt in every other civilised country in Europe. He moreover observed, that in several of these colleges young Englishmen were found, proving that the want of some institution of this kind was felt also among ourselves. He had even been applied to by strangers with respect to the regulations and terms of admission to some of these colleges, and particularly by one person, who was anxious to learn whether any and what provisions for the religious instruction of a protestant existed in the Agricultural College of Grignon, near Paris; a circumstance showing that misgivings were entertained by parents on that head, in sending their sons to a foreign agricultural college, which might be removed by the establishment of one at home. Since, then, a demand for the kind of instruction which may be imparted at such an establishment exists both here and elsewhere, is there anything in the circumstances of this country which forbids us supplying it? Is there not, on the contrary, a stronger reason for giving to British farmers a good education than exists elsewhere? This was not the place for any political discussion; but those who, like himself, cherished the hope of seeing the population of the country mainly supplied with the necessaries of life from its own soil, must of necessity assume that the latter can be rendered capable of yielding a much larger produce than it does at present; for as the population is increasing at the rate, it is said, of about 700 a day, the produce of the soil must go on increasing in an equally rapidly ratio, if we are to continue to depend upon our internal resources for food. But as the industry of the nation is already taxed to its utmost, this increase can only be obtained by increasing skill, increasing intelligence, increasing knowledge on the part of the cultivator. The farmer might in this respect take a lesson from the manufacturer, who, though it is acknowledged that in point of mechanical skill Great Britain takes the lead of all other nations in the world, is so far from imagining that he is arrived at perfection, that he is constantly aiming at improving his machinery and his processes; whilst the farmer, who in some districts has gone on from time immemorial in the system of his forefathers, fondly imagines that there is no further room for advancement. It is not expected, however, that by the foundation of the proposed college, every farmer should be rendered a practical chemist, or capable of originating discoveries; but that in each agricultural district there should be a few persons capable of suggesting improvements, whilst the great majority should at least be sufficiently well informed to understand the principles upon which the approved practices in husbandry are founded, and the conditions on which they depend for their success. Thus, for instance, if the plan of preserving the liquid manure be introduced in a given district, it should be understood by the farmers who adopt it, what elements it imparts to the soil, how these elements may be best prevented from escaping, and why their loss is so injurious. The Professor concluded by expressing his satisfaction, that the first agricultural college in South Britain should have been projected by the inhabitants of a town and neighbourhood in which, from early associations, he felt a personal and lively interest, and confessed that he entertained a stronger desire to see the institution established on this account, than for the sake, even, of the great cause involved, being convinced, from all that he had heard and seen, that such a demand exists for education among the farming classes generally, that means will be provided in some part of the country or other for supplying it; so that the principal question is, whether Cirencester shall have the credit of taking the lead in this great movement, or whether it will be left in the background by other places in the kingdom.

Mr. Lawrence, solicitor, seconded the resolution. He entertained the opinion that this country was capable of producing the muscle, bone, and even the fat of all her Majesty's subjects, if it were properly cultivated; and, looking at the great increase which was taking place in the population, he must say, if he might use the expression without profaneness, that God never sent mouths without food to put into them; and he was inclined to think that the finger of Providence directed the exertions which were now making to supply food for the increasing population. All were interested in the question—manufacturers among the rest—for if they would look at the immense proportion of their productions which was consumed at home, in comparison with what was exported abroad, they would see that they had an equal interest in increasing the productiveness of the land. He himself was no farmer, nor did he own land worth speaking of; but he felt strongly the advantage of promoting agricultural improvement. He believed that if the proposed institution were supported by the farmers generally, there need be no fear of assistance from the owners of the soil; and he did hope, after the meeting of this day, that no difficulty would be found in raising the funds. Some individuals had asked the rate of interest which was to be allowed, but he had to state that those persons who were looking for interest must go into the various stock-exchanges, both British and foreign, where they would find ample investments for their money, and not look to the proposed institution as likely to serve their purpose, for he hoped that its supporters would not bestow one thought on the question of interest. He should invest his money with purer motives, and feel that in doing so he was advancing the prosperity of agriculture, which interest he believed to be the chief and most important of all others to the country at large, and should consider that it was yielding him greater interest than he had ever received from any other investment.

After thanking Lord Bathurst for his kindness in taking the chair, the meeting separated.

AGRICULTURAL SUGGESTIONS.

Sir,

Whatever is thought by your readers of the political economy of the manufacturers, it cannot be denied but that they are a wonder-working people; for their ingenuity enables them to sell us cloth at a price that in former days would possibly have been required for strong paper; and it may be a question whether it would not pay the farmer to make caps of it, to put on and take off his stooks of corn in harvest time, as the weather may suit? Then another question arises—whether it would not be cheaper for the farmer to use tarred calico to cover his hayricks than straw and spars, did it serve for two years? I do not know whether you are well supplied with tarpawlings on the other side of the Severn, but I strongly suspect there is frequently a loss from the want of them on this, and cannot help thinking that the strong wide calico that is offered for a few pence a yard has capabilities, with the aid of webbing for staying it, for such a purpose. Of course there would be much sewing work necessary; but we have it on record that that is done cheaply in this country. But all these questions call for experimenting.

Is it not a little anomalous that we send ships far across the seas for manure, and pay much for it, when it is notorious we are wasting an incalculable amount of it at home? Good managers generally look about their establishments to see what they have available, before they trouble the shop. Much of our waste of manure proceeds from the want of knowledge, as well as industry. Although it is obvious that vegetable matter is gas—for on its being exposed to the air or fire it is dissipated—yet often so little trouble is taken to preserve it from the sun, the wind, and the water, that to get farmers to carry it from the cattle a few yards, mix it with dry earth, and keep it under cover, would involve such an innovation in the general treatment of manure and farming, that the example of a model farm, comparative experiments, and reports, might be of service.

I have written to you something before on the subject of water-pools, and beg your attention to a principle that I think should be attended to in making them—that as much gravel as possible should be put in the mortar, where the water is to be confined by mere plastering; for the art seems to be, to fill the interstices between the small stones, then there can be little cracking, for the stones are not subject to change. I found by experiment the unoccupied space between small gravel was nearly one-half; but different sized gravel may have more or less unoccupied space between it. That, however, is easily ascertained by filling a vessel with it, and then pouring water into the vessel, which will enable a person to find out the proportion. But here is a field for experiment and reporting.

The principle of the rocking-chair is, I have learnt, used in America for converting cream into butter. The same principle might possibly be adopted for separating corn from the straw, for making mortar, and possibly for other purposes. The business calls for experiments and reports.

A blacksmith can, with the aid of a little coal and his forge bellows, boil a kettle in a short time. Possibly heat might be economised for other purposes in the same way. The matter calls for experiments.

I proposed a plan to the Mechanical Section of the British Association, at Manchester, for raising water, which I thought might be done with such facility as to render it a moving power for machinery. They told me my plan was adopted in the East; though they did not tell me whether the plan would raise water easier or not than that adopted in this country, which important question remains to be settled. Now a part of the plan was to move the pumps, and not the pistons. I have made the experiment, and have raised water by the plan; but the scheme calls for more experiments than I can afford.

I had a model of a plan to show at the meeting of the English Agricultural Association at Bristol, that might, I think, be adopted with advantage for storing straw; but it calls for experimenting and reporting.

I poured acids on the sand alluded to in a former letter. I found that a violent chemical action took place, which was possibly in consequence of the salt and limestone the sand contained, as particles of lime became perceptible to the naked eye; and the business calls for experiments.

I beg to call your attention to the enclosed preserved cabbage: you see it is green, and I can tell you it has been in that state for eight months or more; it has merely had a little salt put with it in a glass bottle; and I cannot help thinking that salted cabbage might be used as a condiment with dry food for fattening cattle. I think the matter calls for experiments. But this may be inferred, from the cabbage, which is of so decaying a nature, being preserved green so long by means of salt, that salt must be very essential to vegetation in general; and that it is a question, whether British agriculturists sufficiently avail themselves of the surrounding ocean?

In the other package you will find some pears and apples, which have been preserved in that state by subjecting them and some brown sugar to heat. If you will taste a little of it you may possibly think it not so very bad a preserve that further experiments are not desirable to ascertain the availableness of the orchards and gardens of England.

I have endeavoured to show practically the necessity of an experimental establishment for the advancement of agriculture, and in corroboration let us ask how other branches of knowledge are advanced—for instance, the medical profession—is it not by schools, professors, lectures, experiments, practical reports, museums, &c.? And can it be questioned but that agriculture would be advanced by the same means; or can it be said that the art that is to enable the agriculturists to meet the extraordinary demands of our increasing population is not worth such public provisions? Was there an agricultural museum established in the neighbourhood of London, there can be little doubt but advantage to agriculture would follow, and it might be made in some measure to support itself.—I am, Sir, your obedient Servant,

CADOGAN WILLIAMS.

NEWCASTLE, May 24, 1844.

[The sample of salted cabbage submitted for our inspection was as green and as free from appearance of decay, as if it had only just been cut. With respect to the preserved apples and pears, our opinion is that they would form a very serviceable preserve, and, as our ingenious correspondent observes, make the orchard contribute more than is generally the case to the profits of the farm. We also think with him, that improvement in various departments of farm management must necessarily result from the steady pursuits of inquiring minds.—EDIT.]

SUGGESTIONS FOR IMPROVING THE AGRICULTURE OF ENGLAND.

SIR,

At no past period of the world's history has the social fabric of Britain occupied the position it now does, of late years in particular—the division of the people into two classes, the very rich and the very poor—and to which point civilized society seems throughout past time uniformly to tend, has progressed with more than common rapidity in this country. That a crisis is at hand cannot be disguised; that a change will be brought about, either by moral influences inherent in the constitution or physical force, is to me self-evident. The schoolmaster has now been long abroad amongst the masses, and has not been idle. Every hour is adding an accession of information to the people. The feeling is rooted in their minds that they are brutally used—the ass that bears all the load—while their vested rights, the right from heaven, the right to labour and to obtain due remuneration for their exertions is scouted and held at nought. They know that from the labour of themselves proceeds all real wealth, the only wealth any country can call its own; and they have scripture for it—"Thou shalt not muzzle the ox that treadeth out the corn."

Whether the fearful position of affairs in this country at this time has taken its rise from the passing of the Corn-Bill of 1815, from the return to cash payments, or the cessation of the profligate expenditure consequent on the foolish wars in which the country had been so long involved, I am not politician enough to say. It is, however, quite consistent with my observation and experience, that for the last thirty years, or since the year 1815, the privations and difficulties of the industrious classes of every shade, in this country, have been gradually on the increase. That even when church and factory building, the formation of railroads, the market of the world for our manufactured goods, the spirit of agricultural improvement, excited to exertion by the high prices of farm produce, influenced by high protecting duties, and all the concomitants for increasing wealth, high-wrought extravagance and wild speculation, with all but unlimited credit, were in the zenith of their mad career, still many of the mechanics, farm-labourers, and other operatives, frequently found much difficulty in obtaining employment, and still oftener in getting adequate remuneration for their exertions when employed, thereby of course imparting a portion of their sufferings to the artisan and shopkeeper. What, then, but the utmost distress, can be expected to be the state of the classes referred to, and more when all these sources and investments to the employment of labour may be said to be furnished and withdrawn, while every year, according to the last census, about four hundred thousand are added to the population, and, of course, in a proportionate degree to the supply of labour, which already so much exceeds the demand? that in fact the portion of labourers who are employed are barely allowed the means of subsistence for their exertions; while the remainder, constituting a very large portion, driven to desperation, are either starving about, or inmates of the workhouse union bastiles: or more comfortably, though discreditably driven, to be located in the gaol, probably for picking up a bit of stick to warm the attenuated frames of themselves and families, or catching a rabbit to allay their craving appetites, while the loss of trade to the shopkeeper, consequent on the labourer's want of employment, and the burthen of their support in the workhouse and the gaol, are fast reducing them to a like state of poverty and want, the end of which is fearful to contemplate. Why, in the name of wonder, should this state of things be allowed to exist? There is plenty of profitable labour to do in the country, which is not yet half cultivated, and there is plenty in the land to which the labourer, who is the instrument that under providence produces it, has the most undeniable right to a share; and he must and will have it, for there is a point beyond which human sufferance can no further go; there is a point, indeed, beyond which patience is no longer a virtue. The comfort and well-being of the labouring people is the safety-valve of the state; the most important duty of a government, but the last they attend to, and only when forced on them by the people themselves. It is my conviction that it is only by finding them immediate remunerative employment that the most direful consequences can be avoided. How that source of employment is to be found is a question for the wise men who steer the helm of the state to find out.

The effect anticipated from the repeal of the corn-laws and the opening of a free trade in all sorts of merchandize, the succedaneum of the many for every ill, is, I think, to say the least of it, very problematical; were a free trade in merchandize and something like a free trade in religion, conjoined to which might be added a national militia in place of a standing army, and the money expended in the support of these contradictory establishments applied towards the exigences, not of the state, but of the people, I do believe that not only the temporal but also the eternal welfare of the British people and the world would be advanced, and those funds could be employed in the formation of useful works, and in the promotion of emigration, whereby the supply of labour could be kept in an equilibrium with the demand.

The outcry of the manufacturers and the principle of action with all classes is to buy in the cheapest market and sell in the dearest. The manufacturer knows as well how much food is absolutely necessary to keep the life fluttering in the bodies of his operatives as he does the quantity of oil required to make his mill wheels run swift, and having it all his own way he will give no more of either than he feels to be for his own interest; and did he do otherwise he could not compete in the market at any rate with like advantage. The great mass of the landowners are acting and have acted throughout on the same selfish principle, and with infinitely less credit either to their heads or their hearts. For what purpose, it may be asked, have they had the produce of their estates protected by high duties against the introduction of foreign produce, but that they might be the better enabled and encouraged to employ the labourer in improving their lands, and rendering such foreign importation unnecessary? Have they done so (I speak of the English landowners)—improved their lands themselves, or given proper security and encouragement to do so? Quite the reverse. They have squatted themselves on the Corn Bill of 1815; and when all the world was moving on, they kept their seats in *otium cum dignitate.* They forced their labourers on the enterprising manufacturer for bread, whose market being long since glutted, he now returns them on their natural owner, and betwixt the two the poor people are left to starve, while the government look coolly on, or rather give their best aid in sapping the social fabric; for Sir Robert Peel giving his tenants' cows the use of a bull, and directing their attention to guano as a manure, is no cure for the evil, and, in fact, is the most silly effusion, under such momentous circumstances, that ever proceeded from the mouth of what the world calls a great statesman. Had he given his tenants perpetual leases on a corn-rent commutable into money at the average prices of the district, he would have set a noble example, and an advantageous one for himself. Had he turned round on the landowners, and told them that the soil was the property of the country, they only the trustees, and as such they must either cultivate and employ their labourers, or vacate their holdings, he would not only have immortalized his name, but conferred an invaluable blessing on the landowner and every individual in the kingdom. Could the landowner at this time have laid his hand on his heart and said, that for the last thirty years there has not been an acre on my estate which has not been in a state of reclamation, or a labourer in the parish who has not been in full employment and amply remunerated, he would have been a rich, a happy, and a useful man; and I have no doubt that in England there are many such. Many I could point out who look forward to the time when all restrictions in trade shall be removed, mankind amalgamated into one family, and the soldier trade become obsolete over the earth. Disputes will arise 'twixt nations as well as individuals, which, however, can be settled by arbitration, as all disputes are ultimately; for what is a judge, a jury, or a cabinet council, but arbiters, though too often very dishonest ones?

In illustration of what a people, whose hearts are fraught with freedom, and energies unrestrained by the withering influence of priestcraft, can accomplish by uniting their interests for the good of all, Scotland affords the most notable, the most exemplary instance on record, either in ancient or modern times. Placed on the outskirts of the earth, with a soil naturally very barren, lying on a wet impervious substratum, and a bleak climate over all, not two centuries since the country lay a naked waste, without a yard of road made by the hand of man, with exceptions rare and far between, only a few hovels occasionally breaking the monotony of the stunted heathy scene. The few people scattered over the surface, probably poor, and in domestic comfort and useful or moral intelligence but little removed from a state of barbarity. Agricultural improvement and the rudiments of literature, having, however, been revived or infused amongst them on sound, equitable, and liberal principles, Scotland now stands pre-eminent, every acre giving forth its fertility in some way; and for plain common sense, morality, and industry, take the people in the mass, I believe they are neither surpassed nor equalled by any nation which ever existed on the face of the earth.

Long leases, not less advantageous to the landlord than encouraging to the tenant, were certainly the principal agents in reclaiming the country, and bringing about this high state of agricultural improvement —not leases of nineteen years, at a *money rent*, as Sir Robert Peel offers to his tenants, and which, in these unsettled times, they wisely decline accepting, but leases of two or three nineteen years, and not unfrequently a life-time or two tacked to the end of them, and sometimes permanent, the rent being payable in grain; and but for the over acuteness of the landlord having had such payments commuted into a fixed money rent, antecedent to the great rise which took place in the prices of grain about fifty years since, would have been an oppressive rent then, and perfectly equitable at the present day. The landlord and tenant in short saw that their interests were inseparable, and wisely co-operated in the improvement of their country and comfort of their dependants, without which the social fabric never can be sound. The parish minister and schoolmaster of these times, restricted in their proper sphere, having also plied their callings vigorously, succeeded in inculcating on the minds of the people a spirit for reading and inquiry, seed which, fortunately, falling on good ground, spread luxuriantly, and now needs no nursing. The lease of nineteen years' indurance rent, two-thirds grain, commuted into money at the average prices of the district, the other third in cash, is now most approved of on arable lands, and mutton and wool on pasture farms; and on this principle, corn being the standard of value, an interminable lease may be contracted without prejudice to the pecuniary interests of any party, but the reverse, and be of immense advantage to the country at large. The present leasehold system in Scotland, is, however, so well arranged, that improvement is never checked, while deterioration is carefully guarded against; and the tenant passing from one farm to another may be considered as merely changing his residence. As to the parish minister and schoolmaster, like all stipendiaries, their extreme selfish laziness had lost them their repute, and the really useful and worthy portion of them have cut the establishment, which is evidently doomed at no distant date to be extinguished for ever; *sic transit gloria mundi.* May every other country follow the example set them by Caledonia: educate the people by every possible means; leave religion to its own intrinsic merits, and it will flourish more and more. The ministers will become good and zealous men by necessity and habit conforming them in well-doing; that religion which the conduct of a great portion of them, under existing circumstances, in the eyes of the short-sighted casts disgrace on, would shine forth in its native loveliness. A secular meddling priesthood have ever been the curse of every country in which they have gained a footing.

What in the name of all the Capulets would Scotland have been at this day, had she had the pusillanimity to have allowed herself to have been once fairly bestrode by reverend bishops, tithe collectors, &c. &c., may be in some measure conceived from the wretched state in which that fine country Ireland now is and has been for ages; and but for the same cause the agriculture of England would have been far, far in advance of what it now is. The nearer, indeed, you approach to a cathedral, the more wretched the agriculture, the more ignorant, idle, and vicious the people, is a fact requiring no illustration, to any one who can recollect the tragedy got up some years since by Thom at Canterbury. I may, however, notice Norwich, where I happened to be for some time about a year since, and which is planted with churches, and peopled with parsons; and though there is probably not a better man in England than the bishop, yet Norwich is the most depraved place I ever set foot in. The catalogue of their agricultural implements would fill a folio volume, while one of its pages would suffice for the Scotch farmer. Nor have I ever seen an agricultural implement exhibited in the Norwich market that a Scotch farmer would make use of. The locomotive threshing machine is quite a favourite in Norfolk and most parts of England. The expense of carting it to and fro, and the waste in using it must be very great. The want of leases, which precludes the tenant from erecting a machine on the farm, makes it in some measure necessary. It is painful, however, to think, that it is not unfreqently worked on the tread-wheel system, and women the operators, who, alas, are too often practically acquainted with the step. There is not a locomotive threshing machine throughout Scotland, and though I believe there are more fools *there* than wise men in England, yet there are none so foolish as to expend their time and money upon any man's land without the security of a lease; indeed I never heard of any landowner in Scotland who had the hardihood to make such an ungracious proposition. I know a farm of great extent, and the very best of land, lying within three miles of Norwich, let on an eight years' lease, at about 50s. per acre imperial, and the same landlord has upwards of £5 per Scotch acre,* on a 19 years' lease, for land at least a third less valuable, and lying upwards of seven miles from Edinburgh. The English tenant has a better market than the Scotchman, and cheaper labour: he, however, may be saddled with church rates, first fruits, consecrations, &c., &c., which the Scotchman is happily ignorant of, and which, with oil for the tread-mill, a machine the Scotch labourers have only heard of, may make a considerable item against the English tenant, and the labourer's industry. Norfolk, the prime, the leading agricultural county of England, with a fine soil and climate, and the example set them by late famed Earl of Leicester, is yet at least a quarter of a century behind the average of Scotch agriculture; and I believe the morals and intelligence of the people are also much behind, though my knowledge of the Norfolk labourers is too circumscribed to be able to form an opinion.

Had the English landowner taken the example of his Scotch brethren, not a tithe of the workhouses, treadmills, and gaols, would have been required. What he ought to have done he now must—either improve his lands and employ the people himself, or give tenants security to do it for him. On his exertions depends the salvation of the kingdom. Were the wet lands of England judiciously tile-drained, and every acre subjected to a substantial subsoil ploughing, the produce over all might be doubled, the importation of foreign corn, &c., made a losing game, and the business of clothing the employed labourers, now naked and starving, would open a better mart for the goods of the landowners' best friend, the manufacturer, than any foreign market could afford.

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* The Scots acre is one-fifth larger than the imperial acre.

Your obedient servant,

SOUTHWARK, May 24, 1844. J. C. PONTON.

[NOTE.—With much that is objectionable, there is much that we are disposed to agree with in the above paper. We do not, however, agree with the writer's abuse of the New Poor Law. It is very easy to set up a cry against this, or any measure, by those whose sole object is to pander to popular prejudice; but we should like to know what better system can be substituted for it. Would Mr. Ponton like to return to the *old* law, with its wholesale money allowances, at the discretion of clerical and other magistrates, too often regardless of the amount they had the power of levying on the impoverished rate payers? But this is a subject far too important to be discussed in the brief compass of an editorial note; and therefore we dismiss it for the present, regardless alike of the abuse and lies that have been vented against one of the most important and useful measures that ever passed the legislature.

We agree entirely in the writer's commendation of Scotch farming; but not to the prejudice of that of every other country in the world. As to the advantages or disadvantages of any particular machine for threshing, surely the question may very well be left to the experience of those who have to use them. The opinion of a person confessedly ignorant of the subject will go but little way towards its decision. His abuse of the "tread-mill," as he is pleased to call the hand-thrashing machine, is about on a par with that of the "union bastiles." Surely the employment of manual labour for such a purpose, or for *any* purpose, deserves praise rather than censure.—EDITOR.

APPLICATION OF GEOLOGY TO LAND-DRAINING.

Royal Institution, May 24.—Lord Prudhoe in the chair. The subject was "The Application of Geology to Land-draining," by Wm. Ogilby, Esq., Sec. Zool. Soc. Mr. Ogilby commenced by stating some of the more prominent injuries inflicted on the soil by stagnant water. He explained more especially how the land was rendered cold and late by the *great capacity of water for heat*, as compared with clay or sand; the same quantity of heat which is sufficient to raise the temperature of earth or mould four degrees of Fahrenheit, and of common air five degrees, being only sufficient to raise that of water one degree; the residue being absorbed by the water and rendered latent. Consequently, when the land is saturated by water, the sun's rays, instead of being expended in heating the soil, are absorbed and rendered latent by the water which it contains, and the soil derives but one-fourth of the warmth which it would do were it filled with common air instead of water. Other injurious effects were, that it soured the land, and gave rise to the formation of substances hurtful to vegetation. These were caused by the exclusion of common air and the oxygen which it contains from the pores of the soil. Vegetable and animal manures thus remained imperfectly decayed, or decay was converted into putrefaction, and acetic, malic, tannic, gallic, and other acids, substituted for carbonic acid and ammonia, the products of simple decay, and which, with the elements of water, are now recognized as the chief agents in the nourishment of plants. Superabundant moisture, likewise, rendered the climate insalubrious; but its injurious effects were more immediately recognized in supplying the roots of growing plants with a greater quantity of moisture than they are able to digest, and thus rendering them weak and dropsical.

Mr. Ogilby next proceeded to explain how these injuries might be remedied by efficient draining; and observed that land was rendered wet and unproductive from two sources; first of all by rain falling on the surface of a stiff clay soil, or stagnating within the pores of a loamy soil, incumbent on an impervious subsoil; and, secondly, by springs overflowing the surface from some higher ground, or oozing up from beneath the soil itself. These two different forms of disease required different modes of treatment; the system which would accomplish a radical cure in the one case, might, indeed, alleviate the effect, but could never remove the cause in the other; and Mr. Ogilby stated that the great error of modern writers on draining consisted in not being aware of, or at least not sufficiently distinguishing, these different causes of wetness in land, and the different modes of treatment which were applicable accordingly. The common method of *surface draining*, which was so much in vogue at present, and which was necessary and efficient for the discharge of rain water, would produce but a partial effect in alleviating the injuries caused by subterraneous springs; and that, too, at an enormous cost, compared with the expense of simple and more appropriate modes. High-lying arable soils, especially in Ireland, Scotland, and the west of England, were frequently injured by both causes; but the greater part of the mischief commonly arose from the rains which fell so abundantly in these localities, and it was to such lands that the system of *furrow draining* was peculiarly applicable. The principles of this system consisted in cutting parallel drains at equal distances of from fifteen to thirty or forty feet asunder, according to the tenacity or lightness of the soil, and leading them all into one or more main drains, according to the inequalities and size of the field. Great differences prevailed among practical drainers as to the distance, depth, width, fall, and direction of the parallel drains, which Mr. Ogilby ascribed to the different circumstances of soil, climate, and situation in which the several observers had found particular modes most efficient, and deprecated the idea of any one system or set of rules being universally applicable to all circumstances and localities. The distance of the drains he stated to depend entirely on the nature of the soil, of which it should vary inversely as the tenacity; in the stiffest soils experience proved that the drains were perfectly efficient at fifteen feet apart, and in very light soils at from thirty to forty feet. The depth was not subject to much variation or controversy: from 30 to 36 inches was generally sufficient, it being always understood that the main drains should be at least 6 inches deeper than the parallel. The width of the parallel drains should depend on the quantity of water they had to carry off; if the flow be insignificant the drain should be cut very narrow, generally not more than two or three inches wide at the bottom, otherwise the water will stagnate, instead of running freely off; if the flow be more considerable, the drain must be made wider in proportion, to prevent a too rapid current from tearing up the bottom, and in time choking the drain. As to the fall and direction of the drains, it was stated that great differences prevailed, especially where the land lay on the face of a hill, and had a considerable slope; one party maintaining that they should be run perpendicularly up and down the face of the hill, another that they should be run diagonally across it. Mr. Ogilby believed both opinions to be right, under particular circumstances, but that neither of them was a correct expression of the actual principle upon which the direction of the drains depended, which he stated to be that the parallel drains should cut the different strata of the land perpendicular to the line of strike, whilst the main or leading drains should be in the direction of the dip. This position was illustrated by a large section of the Isle of Wight, and strengthened by the well-known geographical fact, that it is consonant to the system which nature presents in the direction of large rivers and their tributary streams. After explaining the various methods of filling these drains, by tiles, broken stone, wood, straw, &c., Mr. Ogilby proceeded to consider the case of land injured by subjacent water contained in the bowels of the earth, and forcing itself up in springs from beneath, or trickling down from the tail or outcrop of some overlying strata. This was stated to be the cause of all the great bogs, fens, and morasses, which covered so large a surface in Ireland, Scotland, and some parts of England, and which, when laid dry, produced some of the finest land. This part of the subject was illustrated by numerous geological sections, explanatory of the formation of springs, and the origin of the fens and bogs to which they gave rise. The proper mode of draining such land was discovered and practised extensively during the latter half of the last century, by J. Elkington, a Warwickshire farmer, who had the merit of perceiving the relation which this species of wetness, and the origin of springs in general, bears to the geological stratification of the surrounding country, at a period when the knowledge of stratification was yet in its infancy, and confined to a few inquirers. The great success which attended Elkington's practice, attracted the attention of the Government of the day, and a Parliamentary grant of £1000 was voted to him, on condition that he should impart his secret, as it was then considered, to certain individuals appointed by the Board of Agriculture. This was done; and the result, published by Johnstone, one of the persons appointed, displays one of the most beautiful and important applications of scientific principles to practical purposes within the whole range of human knowledge. Yet, strange to say, the very memory of Elkington's system seems to be lost at the present day, or remembered only to be condemned as inefficient, though it rests on indubitable scientific principles, and the works of Arthur Young and various County Reports are filled with testimonies of its efficiency and success. The truth, however, is, that its application requires a more extensive and scientific acquaintance with the origin of springs, the laws of hydrostatics and the principles of levelling, as well as a more practical knowledge of the stratification of the earth, than common land-surveyors, or most writers on this subject can be expected to possess; and of all the practitioners of the present day, Mr. Ogilby stated, that Mr. Stephens, of Edinburgh, was the only individual whom he knew to be aware of the real importance of Elkington's system, or to have practised it extensively. The principles upon which this mode of drainage depends are purely geological. Elkington divides the different strata, which compose the globe, into two great classes, those which, like sand, gravel, &c., are of a porous nature, and permit water to sink into and percolate freely through them; and those which, like stiff clay, compact rock, and that species of gravel cemented by iron, which is commonly called till, are impervious to water. Suppose, as in the case of the plastic clay and other geological formations, numerous alternations of porous and impervious strata occur, the rain-water which falls on the outcrop of the porous strata will percolate down through its substance till it arrives at the lowest point, where it will lie upheld by the subjacent bed of impervious clay, and confined by a similar bed above. The porous bed will thus resemble a bent tube, into one or both ends of which water is poured: if one or more holes be bored in the upper wall of the tube at its lowest point, the water will spout out of them like a little fountain; or, if the tube be filled, it will at last overflow at the ends. This is the cause of the wetness which gives rise to bogs and morasses. These swamps always rest immediately on a till or clay bottom, incumbent upon a stratum of sand or gravel filled with water, and cropping out on some high ground in the neighbourhood from which the water descends. The rains of hundreds or thousands of years gradually filled these porous strata, till they at length trickle over the lower edge of the outcrop, forming a continuous line of springs which overflow all the surrounding low lands, or burst up at the lowest point through accidental crevices or weak points of the superjacent clay beds, and give rise to the green welleys and shaking quagmires so frequently met with in fens and turf bogs. The former case happens along the edges of the London Basin, where the clay comes in contact with the subjacent sand beds of the plastic formation; in Kent and Sussex where the weald clay meets the Hastings sand on one side, and the chalk ranges of the North and South Downs on the other; the latter is almost universally the case in the bogs and fens of Ireland and Lincolnshire. To cure the former species of wetness, it is only necessary to draw a trench along the line of the springs at a short distance below where they burst out, and sufficiently deep to cut into the porous stratum contaning the water, and thus intercept it before it rises to the surface or overflows the land. This line of the drain is determined by the application of the spirit level, upon the principle that water always stands at the same elevation in the same reservoir, or in reservoirs communicating with one another; and in cases where the porous stratum containing the water lies too deep to be reached by the bottom of the drain, wells are sunk at intervals, or a large auger is used to make bore-holes in the bottom, up which the water ascends, and of course lowers the spring or reservoir to the level of the bottom of the drain. In the second case, where the bog lies nearly level, and the springs burst up at intervals through accidental crevices in the till or clay bed on which it rests, one or more deep trenches are cut across the bog, in the proper direction to secure a good fall, and wells or bore-holes sunk as in the former instance though the subjacent clay to let the water escape: its level will consequently be reduced to the height of the bottom of the trench, which it is always better to cut down to the clay or till, where the bog is not more than ten or twelve feet deep. Sometimes when the bog lies perfectly landlocked or surrounded on every side by hills which afford no outlet, the water may still be carried off by sinking a well or bore-holes into a *dry* subjacent stratum of sand or gravel, and thus letting the water escape beneath. These principles, Mr. Ogilby stated, were applicable to many districts, and afforded the only cheap and efficient system for lands injured by subjacent water.

Stoppage of a Drain by the Roots of Gorse.—A drain was cut in a piece of land, in the parish of Edwinstowe, above the level of the water meadows, adjoining to the township of Clipstone; it was intended for a soke or side-drain, and a large tile was put into it; at a distance of fourteen feet from the drain grew a quantity of strong gorse, the roots of which ran along down a sloping bank, and into the drain, and choked it completely.—*Hutchinson's Practical Drainage.*

ON IMPROVING THE CONDITION OF THE WORKING CLASSES, &c.

SIR,—You have inserted some papers of mine of a similar nature with the following in former numbers of your periodical. Two of the petitions have, I believe, been presented to the House of Commons by men of distinction. One of them was sent for presentation, but I do not know whether the gentleman attended to my request or not. The letter I sent to several members who seemed to take an interest in amending the poor laws, and three or four of them had the politeness to acknowledge it. Should you think the papers worth a place in your Magazine, they are at your service.

I am, Sir, your obedient servant,

CADOGAN WILLIAMS.

BRIDGEND, June 5, 1844.

To the Commons of the United Kingdom, &c.

The humble Petition of Cadogan Williams saith,

That it is probable that much money is given by the working classes for medical assistance to uneducated and incompetent advisers, and for quack medicines; which money, were it paid to the most competent of the medical profession, possibly would not be the way by which the working classes could best secure to themselves medical assistance.

That your petitioner would be glad to see the attempt made by the working classes to secure that object, by acting on the principle of mutual assurance; and your petitioner begs to say what occurs to him on the subject, and to show how the trial might be made. Now we will suppose that the average of illness for each individual is one week in fifty-two. Then we will put down the charge of medical assistance for each family in a town at six shillings annually.

It might be difficult to get a sufficient number of the working classes to co-operate, and be punctual in their payments, to make it worth a medical man's attending to such a practice, if the right average charge were ascertained, which I do not pretend to know; indeed both parties—medical men and their patients—would have to learn the power of co-operation in the matter.

The way your petitioner thinks the experiment might be made, would be, that government, in three or four towns that had a population of four or five thousand inhabitants, should give a bounty to medical men who would exclusively devote themselves to such a practice—say one hundred pounds to one, and seventy-five to the other. Of course regular books must be kept, and the largest sum of money given the medical man who had the greatest number of families under his charge, and best fulfilled its duties.

How far this proposed principle might be acted upon, and made a self-dependent institution, remains to be developed; but government have the power to throw light on the subject, by acting as above proposed, and increasing the bounty to be paid to medical men and diminishing the annual payment of families, or acting on the inverse principle, as circumstances may require.

Your petititioner does pray your Honourable House will take the foregoing suggestions into their consideration.

To the Commons of the United Kingdom, &c.

The humble Petition of Cadogan Williams saith,

That your petitioner begs to express to your Honourable House, that it would be a reflection on this great kingdom that adequate arrangements were not made for the care of its paupers of deranged intellects, even did such arrangements require much extraordinary sacrifice of expense; but there is no excuse on that plea with respect to lunatic asylums, for much of the charges should be borrowed, for that is the legitimate way of obtaining the means for the necessary outlay; for the rational rule must be, that to accomplish national objects that would confer equal advantages on the succeeding generations with ourselves, the charges should be defrayed in equal proportions, consequently the funds should be raised for building on such terms that the capital would be redeemed by the time the buildings were decayed, and required being rebuilt.

It is true that in this country bridges are built, and the money for the purpose is raised in a comparatively short time, which might have been necessary in times less improved than the present, but now it is plainly barbarous to do it, and is the cause of much unnecessary injustice.

Taking into consideration the different charges that would take place in maintaining asylums throughout the country, and the savings that would take place in consequence of them, it might be difficult to ascertain where the balance of expense would preponderate, leaving out of account other happy effects arising from the better treatment by the new system of the unfortunate objects contemplated.

Your petitioner begs to suggest what occurs to him should be done to get national asylums established,—That the government, who most likely possess the necessary statistics, should divide the country into districts of counties, and should name two or three of the most central positions in those districts, where asylums might be built. Of course they would fix on positions within a mile or two of towns of some magnitude, to secure medical assistance and superintendence. There necessarily would be in every district which would include counties, several positions which might appear equally eligible. Then, to get a beginning, leave it to the locality that would obtain the farm to build upon, make the largest subscriptions, and otherwise show the greatest zeal in the matter; bearing in mind the rule, that institutions that were to confer equal or greater benefits on future generations as on ourselves, the farm to build the asylum upon might justly be taken at a perpetual rent charge.

Your petitioner prays your Honourable House will give attention to the foregoing considerations.

To the Honourable the Commons, &c.

The humble petition of Cadogan Williams saith,

That your petitioner was much impressed with an idea of the injustice that there should be such a distinction in the fitting up of the different class railroad carriages, with regard to their affording superior security of life and comfort to those that travel by them. And it appears that such doings are justified on the plea, "That no doubt those who are able and willing to pay for first and second class carriages ought to have additional comfort; and it certainly would be improper to recommend the adoption of such arrangements as would offer an inducement to those well able to pay for first and second class carriages to avail themselves of the accommodation provided for those in less fortunate circumstances." We are told in Holy Writ, that we are not to do evil to produce good; then surely we are not to inflict suffering on whole classes of society for the benefit of railroad proprietors. The above reasoning would go to justify water companies having two sets of ducts, and damaging the water that supplied the poor, that they might enhance the price for the rich. In this country the man who pays £2 a year rent for his house has glass in his windows, and is protected at night from the weather in common with the man who pays £100, which he owes to the advancement of the arts and sciences. Must it not then be monstrous, that because modern discoveries have conferred advantages, which were intended for mankind in general, they should be deteriorated needlessly, as regards the humbler classes of society? Let us suppose a jury asked, which is not improbable they may, Whether, had the persons who lost their lives, who were in the third class carriages, where they were in collision with bare wood and iron, been in first class carriages, which are padded, would they have lost their lives? and the answer were No, I leave it for the Honourable House to say what the verdict should be. That the directors may embellish their first class carriages with silk and satin, and give different prices, so that persons may select their society, may be right; but to make one class more secure, and not to provide all with common comforts, is to put human life and suffering in competition with straw, canvass, and leather, &c., things of little price in the present day.

Your petitioner begs to suggest, that in legislating for railroad companies, that it should be with the understanding that all enactments were revokeable, where they were found to be at variance with the good of society in general.

Your petitioner prays your Honourable House will take the foregoing suggestions into consideration.

SIR,

It seems it is intended to amend the poor laws. Having had some experience regarding the old poor laws, I beg to propose a clause,—That no family should be obliged to go into the union house until they had been relieved for four months according to the old poor law. When we reflect that the old law relieved all with little discrimination, there seems to be something very harsh that persons once in their lives should have no alternative between no relief and the union house. When unfortunate circumstances have overtaken those who necessarily are nearest the verge of indigence, surely they should have the opportunity of bending and righting themselves, rather than breaking and losing their social standing, and becoming reckless.

I am, Sir, your obedient servant,

CADOGAN WILLIAMS.

NOTICES OF NEW PUBLICATIONS.

Two Lectures on the Theory of Agriculture and on Farming as practised in Cheshire: with Advice for its Improvement, based on the Analysis of Soil. Delivered at Siddington School, to the Tenants of E. D. Davenport, Esq., January, 1844. By Albert James Bernays. London: Ridgways.

This pamphlet contains a good deal of information on manures, a subject which the author seems to understand; but he should keep to his province. There is just about as much propriety in him directing the Cheshire farmers when to sow and when to clear their fields, as there would be in the aforesaid farmers directing him how to analyse manures, &c.

Practical Observations on the Prevention, Causes, and Treatment of Curvature of the Spine, with an Etching of an Apparatus for the correction of the Deformity, and Engravings illustrative of the Cases. By Samuel Hare, Esq., Surgeon. London: John Churchill, Princes Street, Soho.

The work before us is the production of a sufferer from curvature of the spine, a practitioner of surgery of long standing, (more than forty years having elapsed since he first entered the profession) so that we have a right to expect a masterly treatise. His treatment of the disease seems to be of a settled nature, for we perceive from one of the dedications prefixed to the work, that nearly fifteen years ago he laid his method before Chas. Aston Key, Esq., senior surgeon to Guy's Hospital, and subsequent experience has only tended to convince him of the correctness of it. It appears that the spine is subject to various distortions, and several of these different cases submitted to Mr. Hare form the illustrations to the work. A cast was made of the patient's body in its distorted form, and another after its cure, which have been engraved, and are prefixed to a description of the relative cases. The appearance of the body when it was distorted is so frightfully, yet, we imagine, faithfully exhibited, that a cure might be deemed an impossibility; but a glance at the opposite plate convinces us that we might doubt, and, yet be mistaken. Indeed it is a most happy thing to know that such desperate cases are not hopeless, and that the sufferers can have permanent relief.

Lateral curvature of the spine seems to form the majority of cases; and as it mostly arises from causes which may be controlled, we take this opportunity of stating them—1, tight lacing of the stays; 2, standing with the weight of the body bearing principally on one leg, a practice in which young persons obstinately and thoughtlessly persevere; 3, lying generally on the right side when in bed; and 4, continuing long and repeatedly in one position, as in the practice of music, writing, and such like occupations.

The style of the work is simple, and the causes of curvatures and the method of counteracting them are so plainly pointed out, as to render it a book of great value, as well to those who have families to rear, as to principals of seminaries or other establishments where numbers of young people may be assembled at the period of life most liable to such affections.

The Guide to Trade. The Farmer. Compiled by George Nicholls, Esq.
London: Charles Knight & Co.

This little work has been issued for the improvement of the small farmers, whose experience may have been limited, and whose instruction has been neglected; and to such it will prove to be worthy of notice. "To the instructed agriculturist, and farmers on a larger scale, the editor does not presume to think that his little book will be of use, except by exhibiting facts and principles which ought always to be kept in view, and which are susceptible of general application."

The work is compiled from the writings of the best agricultural authors of the present day, and presents, in a cheap form, much that is valuable on rural affairs. We select one portion, that our readers may judge for themselves:—

"FLAX.

"Flax comes within the definition which we have given of 'Green Crops,' but it is not usually included with them. It may, however, always form a part of a rotation, and it has long been so cultivated very extensively in Flanders, and to a considerable extent likewise in Ireland. No crop affords so much employment, and none better repays the farmer for the care bestowed upon it; and when it is considered what large sums are annually expended in the purchase of foreign flax, whilst our own soil is equal to any for the growth of the plant, its extended cultivation would seem to be an object of national importance.

"The best soil for flax is a friable loam—neither clayey nor gravelly, and such as is easily worked. Soil enriched by much manure causes the flax to grow too strong, and come coarse from the hackle. Flax of the best quality is grown after oats, from clover or pasture lea, if the ground has been laid down in good heart. Sometimes good crops are got from wheat-stubble, after potatoes; but it is never desirable to sow flax immediately after potatoes or turnips, when the ground has had a full quantity of manure.

"In preparing the ground, be careful to have it deep, fine, and clear of weeds. This can only be done by ploughing twice before or during winter, harrowing effectually between the ploughings, to expose the root-weeds to the frost, and then ploughing and harrowing in spring, a few weeks before sowing, so that the seed-weeds will have time to braird, and be destroyed by the final preparation of the crop.

"If the ground be stiff, the roller should be used after the harrow, to break the lumps; then, before sowing, use the small-seed harrow, or one that has short close pins, to level the surface. After sewing, a double turn of the seed-harrow will give sufficient covering—then roll. If the ground is not naturally dry, a water furrow will be necessary. The Dutch sow thickly, by which means they have fine flax; and the stalks bearing only a few pods or *bows*, the seed is all equally ripe; whereas, when thinly sown, the flax is coarse, having branchy tops, with the seed unequally ripe.

"Too much pains cannot be taken in weeding. This is one great cause of the superiority of the Dutch and Belgian flax; not a weed, large or small, is there ever allowed to remain, and the crop pays well for all the labour bestowed upon it. Weeding should be done when the plant rises about three inches. The weeders will often press it down, by sitting to weed; but they should take care not to twist or *swirl* it, or flatten it different ways; as that cracks the young stalk, which seldom recovers, while by merely pressing it one way it will soon start up again.

"The time for pulling is when about two-thirds of the stalk turn yellow, and lose the leaves. By pulling green, the dressed flax appears finer, but it is weaker, and deficient in weight. When any of the crop is lying, it should be pulled and kept by itself; and care should be taken to sort and keep the long, middling, and short, separate. This is particularly attended to on the Continent, and is a means of enhancing the value to the spinner, and consequently to the grower. Flax should never be pulled when it is wet; and it should lie two or three days in handfuls, or small sheaves, before steeping; and the sheaves should be tied very loose.

"The watering should be done with soft water. The best way is to fill the pit from a river or stream, then stop the run, and steep as soon as you please; but if you can only get spring or hard water, fill the pit a week before steeping, that the sun and air may warm and soften it. Never let in any fresh water, unless to supply leakage, which should be carefully guarded against. The Dutch set the flax nearly upright in the water, with the tops down; they then cover it with mud, and in some places with boards, in framework, to keep out the light. Clean straw might answer the purpose as well, if pressed down with sods or stones; and the straw would afterwards form excellent manure, when saturated with the flax-water.

"Every grower of flax should know when it is properly watered, this being very important in the management of the crop. Directions on this point can hardly be given, as the time necessarily varies according to the nature of the water, the state of the weather, and the ripeness of the plant when pulled. The time varies from six or seven, to twelve or fourteen days; and the medium may be near the proper proportion in ordinary cases. Wash the flax in clean water, on taking it out of the pit, which gives it a uniformity of colour.

"It may be noticed here, *that every barrel of water, from a flax-pit, is equal in value to a cart-load of farm-yard manure, for top-dressing. The flax-water should therefore be carefully preserved for the land, and not a drop of it should be allowed to run to waste.*

"Every flax-grower knows when it is fit for lifting, which must be done on a dry day, and the drier it is the better. There is much loss in the mill when the flax is not perfectly dry. If not taken soon to the mill, it is improved by putting it into small stacks, loosely built, with brambles or stones at the bottom, to let the air circulate.

"Milling or hand-scutching are important operations, which are carefully attended to by the flax growers on the Continent. Great care ought to be taken in rolling the flax. It should go through different sets of rollers, of varied dimensions in the grooves, from large to small, so that the shove or woody part will be minutely broken; which will make it more easily scutched, and less liable to be wasted, as it is the long unbroken shoves that tear away the flax. The same care should be taken in breaking or crigging the flax, for hand-scutching.

"The saving of the seed is also an important consideration. On the Continent, the growers have both good flax and good seed from the same crop. Their general practice is to dry the flax in the field, like grain, and stack it till the following spring. If saved for the oil-mill, the seed ought to be nearly ripe; and this may be permitted without injury to the fibre—the Dutch say with advantage. Whether the seed be ripe or unripe, it will be a shameful waste to let it rot in the lint-holes, when it is capable of forming valuable feeding for cattle. There is no other food superior to it, for milk, butter, and fattening; but it ought always to be ground, and with the husk, as the seed is alone apt to purge the animals."

The Sporting Magazine to June. London: M. A. Pittman.

The June number, we perceive, completes the third volume. In the May number the account of a shooting adventure in the Bogs of King's County, under thé title of "Mick Doolan's Head," is very amusing; some may be apt to say the subject is overdone, while those who have sojourned among the "boys" will see nothing extravagant about it. The author, although he had learnt "to receive with great caution the flattering accounts of game given by the Irish peasants," seems, in the present case, to have forgotten himself. Asking Larry Rooney about wild fowl, Larry observed—"Be dad, if ye came here by day, ye'd have plenty of cracking! Faix, there's a power of fowl! and a great dale of hares in it. Och! I wished many times I'd had a gun—divle sich a lot ever I see!"—"Thrue for you," said his wife, "sure the geese do be passing over the house for a quarter of an hour togither!" There was no standing this.—"But can one get near these geese?" "Faix, ye can so! 'Twas on'y Thursday I was go'ne through the bog, and I seen thirty an 'em: you might a'most have knocked 'em down with a turf, *and they tired!*" We, however, have known an instance of a very opposite nature, where, because a question was not asked, the most provoking silence was maintained for some hours, to the annoyance of the sportsman. Two streams, or rivers as they are styled, run through Glendalough; one abounds with trout, as it flows from the lake; the other, coming from the hills, being used for washing ores, &c., is without fish. A countryman was loitering on the banks of the latter, when a strange gentleman came up, set his tackle, and fell to work; "and there was he, sure enough," said Pat, "thrashing away for hours, an' I laughing to myself all the while." On being asked why he did not tell the sportsman there were no fish, he replied, "Och, sure, as he would'nt ask me, I just thought I would let him fish as long as he liked."

Mr. Tolfrey's "Sportsman in Canada" is concluded in the same number. It gives an impressive account of the death of the Duke of Richmond, from the bite of a rabid fox. It appears the animal was a pet, belonging to a gunner of the Royal Artillery, and that both were in the same vessel in which his Grace embarked for the Upper Province. There was also a bull terrier on board, which was permitted to worry the fox, and by the time the party disembarked the animal was in a highly excited and dangerous state. The Duke having to wait for his horse, amused himself by patting the fox on the head. The animal, however, bit his Grace slightly, and, as he thought, playfully; but on the Duke shaking him by the ear, the fox made his teeth meet in the fleshy part of the hand; and through these bites, before many weeks elapsed, this ill-fated nobleman breathed his last.

There is also much variety and ability in several other papers, which we have not space to particularize, and the Illustrations are very good.

Supplement to Loudon's Encyclopædia of Agriculture, bringing down Improvements in the Art of Field Culture from 1831 *to* 1843 *inclusive, and comprising all the previous Supplements.* By J. C. Loudon, F.L.G.S., F.H.S., &c. Illustrated with 65 Engravings on Wood. London: Longman & Co.

To know that the above is by the author of the justly popular Encyclopædias of Agriculture and Gardening, and other estimable works, is a sufficient recommendation for its general excellence. Independently of Mr. Loudon's long practical experience, every available authority on agriculture, and works on other sciences in immediate connection with it, have been consulted, and the result is one of the most valuable works on rural affairs either in our own or in any other language.

Much, however, as we agree with the general contents of the work, we cannot subscribe to Mr. Loudon's assertion that "the agriculture of Scotland is *far* in advance of that of England;" for even had we no opinion of our own, Mr. Pusey's very recent publication of his visit to the best cultivated districts of both countries would prove amply sufficient to convince us that Mr. Loudon had been rather too partial. We also object to the manner in which paragraph 19 of the Introduction is constructed; because, to enable the reader to make a fair comparison of the quantity of wheat grown in England and Scotland, the produce of the best wheat districts of England and the general average of Scotland should also have been given.

The Veterinarian. London: Longman & Co.

The above useful periodical for the last quarter gives us much interesting information relative to the proceedings of the Royal College of Veterinary Surgeons. Officers are appointed, the College is opened, and members have been admitted. At the first Board of Examination the eight pupils who were candidates acquitted themselves in such a creditable manner, as to call forth a handsome and appropriate address from the president. On these occasions each pupil is interrogated by two gentlemen of the medical and one of the veterinary profession; consequently, a diploma will not be lightly earned, nor, we hope, lightly esteemed. It is painful, however, to learn that the subscriptions do not come in as quickly as they ought; many who promised to subscribe have not fulfilled their promises, while others hesitate until they see what will be done, paralyzing the institution in its birth, in place of giving it that vigorous impulse which, in common with every infant establishment, it necessarily requires.

Although some agriculturists may be apt to think that the Veterinarian is not a publication whence they may derive information, we assure them they never were more mistaken. Our previous pages bear witness to this fact; and we will now make some extracts from Lectures on the Horse, by Mr. W. Percivall, M.R.C.S., &c., which will, we think, still further illustrate the truth of our remarks.

The pace of the horse is a matter of some moment to the farmer. At the trial of English and Scotch ploughs Mr. Pusey was satisfied that the Clydesdale far outstepped the English horses. He made many trials, and the results were invariably in favour of the former; consequently their work was more quickly done, and they could accomplish more in a day than could be done by English horses. They certainly were kept in very high condition, and though it was proved that two Clydesdales abreast could do as much work as three English horses in line, yet the keep of the three latter was only about equal to that of the two Clydesdales. We, however, are somewhat inclined to think that the difference would have been so trifling between the two kinds of horses, if they *all* had ploughed abreast, as not to be worth notice; in short, horses in line never can step out so quickly as when abreast, for while the former are continually baffling each other, the latter pull equally and step together with the greatest regularity. Something may probably be learnt from the following extracts on the Paces of the Horse, from Mr. Percivall's Lectures:—

"THE WALK.

"By *good walking* I mean the *powers* or *capabilities* of walking well: a horse not in the possession of that form and action that enable him to step properly or safely in his walk, I call a bad walker; and not one who has been caused to walk improperly or amiss, either through any mismanagement in the training or using of him, or any anormal condition into which he may have been thrown by accident or disease: the epithets *good* and *bad* have, in fact, reference here to natural or original disqualification, and not anything incidental or superadded. The physical properties foreshowing a horse to be a good walker must be collected principally from what has been already said about form, in particular of the fore legs and shoulders; at the same time the hind limbs must not be overloooked, they, with the fore, concurring to make the good walker. We may often, when we behold certain anormal or ill construction of the limbs, without hesitation pronounce it impossible that such a horse can walk well; though we are liable to be deceived in our opinion about the pace being properly executed when we see form that we cannot help admiring. It would be, indeed, a perfection in this branch of our art, could we deduce action from form: although we may venture to decry what cannot fail to perform ill, we cannot always predict what will act well; and one reason why we cannot is found in the circumstance of the physical powers requiring an *excitement*, which, being derived from vitality, is without the pale of our calculation.

"We now come to the question, what constitutes *good walking?* 'For a horse to walk well,' says our excellent authority, old and venerable Solleysell, 'his steps should be quick'—he should 'make two steps with his feet in the space that many horses make one."— —'The four adverbs, LIGHTLY, SURELY, QUICKLY, EASILY, express all the most nice and curious can desire in a horse's walk.' It is easier to point out defects in a horse's walking than to define in what good or proper walking should consist—like many other things, we know it when we see it, but we hardly know how to describe it. Good walking will be found one thing in the cart-horse, another thing in the hackney or hunter, and a third thing in the race-horse; and no one or single description will apply to the walks of all three breeds or kinds of horses. In fine, the walk of a horse should be estimated rather by its effects and products than by the manner or method in which the animal performs it.

"FAULTY OR DEFECTIVE WALKING may proceed from various causes. It may be *natural* or *acquired*. A horse may be so formed that all the pains in the world cannot make him walk properly or well; and the best walker may be rendered otherwise by mismanagement, or from unsoundness, or age. That man will act wisely who refuses to purchase or to have anything to do with the natural bad walker: if he cannot walk well, he cannot trot well, and will most likely prove insecure in one or both paces; and though by a judicious system of *manège* he may and will probably turn out susceptible of improvement, still he will, as I said before, by no pains be convertible into a good or safe walker and trotter; and, therefore, the best counsel I can give a man who wants a horse for riding purposes is, I repeat, to refuse the purchase of *the natural bad walker*. But good walking may be destroyed or converted into bad walking by injudicious training or riding. It is surprising what a difference—a difference known only to horsemen—proper and improper riding makes, even in horses that are by nature excellent walkers. I have often heard my father—who was a good horseman—say, he could tell when another man had been riding his horse from the difference he felt (the next time he rode, himself) in his horse's walking: the hand and the leg have so much to do in inciting the walk, while they restrain the shuffle, and prevent any attempt at a trot. Such a horse, bad or no walker as he is, will show no natural deformity: his make will be that calculated to produce good walking, and he will perform faultlessly in his trot, and most likely in his gallop as well; all which will go to show that his walking pace is bad through mismanagement, and not from natural incapacity. His walking, however, may not be destroyed; it may, by the method of riding, be but altered. From being a free and far stepper he becomes a short stepper, dwelling upon his steps in consequence of being reined in, prolonging his *stays*, and thus, altogether, altered in his walking action from what he originally was, affording an example of what may be accomplished through difference of riding. Foreign-bred horses step short by nature; nor is it possible, I believe, through any system of *manège*, to make them step *à l'Angloise*: they manifest a good deal of action in *lift*—throw their legs about much—have a longer *stay* than our horses, and put down their feet too little in advance of the spots from which they were lifted to make much progress. Again; stepping short, either by nature or from habit, must be distinguished from the short, tender, or cramped step of the horse that has been for any length of time in a state of disuse, or standing in the stable without exercise, as well as from that of the foundered or groggy horse. In cases where any doubt exists in the mind of the examiner, whether the short-stepping walk proceed from the one cause or the other, a trot will commonly dispel it, and exhibit the case in its veritable light.

"THE LIFT of the foot in walking may be insufficient, or it may be greater than is required for the purpose of progression. In the former case, the horse will be likely to hit his toe against any stone or prominence in his way, occasioning him to stumble; and through the effort he makes with the opposite fore leg to save himself, will run great risk of again faltering and falling; the foot coming to the rescue of the other, not perhaps prepared to come flatly down, descending upon its toe, upon which the imposition of weight is sure to cause knuckling over, and so down inevitably the horse must come. But there may be too much lift—over much action in the air: the animal may in his walk even, and more still in his trot, throw his legs about, cross them probably, in that manner that he makes but short advances in progression, being after all but a *slow* walker, and moreover is extremely likely to strike one leg with the opposite foot, either at the fetlock or beneath the knee, the latter being what is called *speedy-cut*. Independently however of the liability to strike, it by no means follows, because a horse has high or free action in his walk, *ergo*, that he is a safe walker. Some of the foreign horses are anything but secure steppers; they drop and suddenly fall down upon their knees, and, I believe, from weakness in those joints. Neither does it follow that horses that go near the ground, *daisy-cutters* as they are often called, are of necessity unsafe walkers—many instances occur proving the contrary. The lift of the foot, in good walking, should be sufficient to clear all ordinary obstacles in the road, and the action should be *collected* within the sphere of the animal's perfect control, and not *sprawling;* and the foot should be flexed in the air without any great deviation laterally out of the line of direction, forward and backward, turning the toes either much out, or much in; though the latter is less objectionable than the former, being both faulty in action. And a horse that flexes his foot well in the lift, exhibits his shoe during the eversion of the foot, and that has a nimble though short step, though he may not make more ground or even so much as a horse with straight action, will be a much pleasanter hackney: in fact, this is the action that has already been described as, *par excellence*, the hackney action.

"THE GROUNDING of the foot should be flat and firm. To the eye of the observer there is the slightest perceptible difference between the toe and heels coming to the ground, in favour of the former; a difference that need not disturb the horseman's good old rule, that *a horse in his walk should place his foot fairly and flatly down.* Alighting upon the toe, as some horses with high and round action are apt to do, renders the step instable until the heel comes to the ground; or, should the superincumbent weight preponderate forwards, then knuckling over is the result, and an awful drop, or else a fall, the consequence. Horses that go upon their toes have, for the most part, strong upright feet, with concave soles; whereas, such as have flat feet are more likely to go upon their heels, to save their weak crusts. We have an illustration of this in the going of lame horses: such as are lame from contraction or navicular disease, feeling the pain or tenderness in their heels, will tread upon their toes; and such as feel the pain in their toes or crusts, horses that have or have had fever in their feet, will do all they can to step upon their heels. It is curious to observe—and one way in which we may do so is by the wear of their shoes—how different the tread of horses is: at the same time we must bear in mind that the wear of the shoe not only tells how the horse treads, but also, in some measure, the manner in which he takes his foot off the ground.

"THE RATE OF WALKING in a horse is faster than in a man. Fair toe-and-heel walking at the rate of four miles an hour, in a man, is accounted a good pace; a horse we reckon ought—to do well—to walk five miles an hour; the ratio between the two appearing to be about as five to four. But how would these relative differences stand, came they to be multiplied? Would a horse walk a hundred and twenty-five miles while a man was walking a hundred?"

Farming for Ladies; or, a Guide to the Poultry-yard, Dairy, and Piggery. By the Author of "British Husbandry." London: J. Murray.

WE have rarely met with a book that so well accords with its title as the one now before us. It has been "compiled during a long life, by one who has visited various parts of the world;" and, we may add, of that observant nature, as not to slight anything worthy of notice; consequently, it abounds with the most useful and copious suggestions on the subjects of which it treats. We must, at the same time admit, that those accustomed to rural life will meet with much that they well understand; yet even they, we imagine, will find information worthy acceptance. Erroneous notions often get abroad, taking such strong hold of some minds as to be with difficulty removed; they are also frequently circulated through the medium of books to a dangerous extent, and, as a case in point, we submit an extract from the work in question, on the incubation of the goose, showing, that no less than three different treatises have circulated an error on that subject:—

"Incubation lasts only from four weeks to thirty days: which we must particularly notice, as no less than three treatises have been recently published, each stating the period of incubation to be *two months;* which, if relied upon as a fact, might lead inexperienced breeders into error. The mistake, however—if such it can be called—has been taken from a prolix work translated some years ago from the French, and from which large extracts have been unhesitatingly copied, even without acknowledgment, by the writers to whom we have alluded; though the adoption of so gross a blunder evidently proves them to be practically ignorant of the subject."

Had we available space we should be tempted to make copious extracts; but as we have not, we are compelled to be satisfied with the following, on the feeding, flesh, weight, and value of porkers:—

"When weaned from the sow, at towards six weeks old, until they reach the age of about three months older, they each require, for the first month, about two quarts of milk per day, or, in fact, as much as they can consume; but, as this is always skim-milk, and that of the sow is very glutinous, a little meal should be added to enrich it. Of this barley-meal is the sort most usually given; but it is, at that early age, rather too coarse, and either what the corn-chandlers call 'fine toppings,' or the finest 'wheaten pollard'—of which they will consume half a bushel in the month—is better: after which, however, barley-meal should be the only kind used; unless, indeed, such a thing as the flour of Indian-corn, or maize, can be got.

"Rice has also been tried; but it must be either ground or boiled, and being thus more troublesome, and fully as dear, without affording any very superior improvement in either the quality of the meat or the fattening of the pig, it is seldom used; though, so far as we are acquainted with its effects, we think it well worth a trial when the same weight is to be had for the price of barley-meal.

"The pig will eat, in the second month, half as much again of both milk and meal as in the first; and in the third, as much again as in the second. At three to four months old he is fit to kill, and will, at the former age, eat as tender as chicken, and may weigh about 30 lbs.; at the latter, he ought to weigh from five to six stone of 8 lbs. each, but the flesh will still be extremely delicate; and the carcase is generally worth in the market at least 5s. 6d. per stone. If kept for two or three months longer, although the meat will continue fine, it will yet have acquired so much more strength of fibre as to destroy some portion of its delicacy, and it loses perhaps a penny a pound of its value; it may, therefore, be doubtful whether the increase of weight more than repays the additional cost of food.

"On this, however, we shall trespass on our readers the account of some pigs fed last year by a near relative, who occasionally feeds them at his country residence for the consumption of his family. Of two prickeared Berkshire pigs, bought out of the same litter, one, killed at six months old, weighed 71 lbs.; the cost altogether, in its purchase and feeding upon milk and barley-meal, being 34s.; and finer pork we have seldom tasted. The other, being kept a month longer, weighed 97 lbs.; but was not, as we learned, nearly so nice, being far too fat and rich.

"Another pair, of the same breed, purchased young, and killed when about eight months old, each weighed 140 lbs., exclusive of offal. 'These were fed,' as the owner states, 'at first entirely on skim-milk and house-wash, and for about six weeks on peas, barley-meal, and skim-milk, as well as wash. They also had about a bushel of acorns, gathered in my own fields, before I put them regularly up to fatten: when I began by giving them about a quart of peas a-day between them, and lastly added barley-meal. Of peas they consumed one sack—that is four bushels—and of meal five bushels; so that together with their cost price, and the skim-milk of a couple of small cows, they stand me, in all, at about 5d. per ℔.'

"This our relation calls 'no great bargain;' though he had four capital flitches of bacon, and admits that a butcher offered him £7 for the pair, and that he probably could not buy such meat for less than 8d. a pound. To which should be added, the value of the head, feet, and entrails, of which country people make so many homely delicacies; besides the pleasure of having pork of one's own feeding. On which, should any one cast a sneer, let it be known that home-fed pork forms a frequent and prominent dish at the royal table.

"On the subject of bacon we shall speak hereafter: but where a sow is not kept, and that pigs are fed and killed young, as delicacies for the table, they can only be reared for that purpose, when taken from the sow, upon milk and meal alone; which is the mode always employed in producing real 'dairy-fed pork;' and if any coarser food be given, it will injure the flesh. In proof of this we, as an experiment, some years ago, took two young pigs of equal weight from the same brood, when weaned, and fed one upon skim-milk, and the other upon kitchen pot-liquor, in each of which pollard and barley-meal were equally mixed. They were both killed when four months old, being then quite fat, and weighing, when dead, about 40 lbs. each; that fed upon the wash being rather the heavier of the two. Joints of each were then roasted, and the remainder pickled; but the flesh of the latter had, in both cases, a taste of grease which rendered it unpleasant, while that fed upon milk was extremely delicate.

"We mention this for the double purpose of cautioning housewives against the too profuse use of any coarse garbage in feeding young pigs for the table; and, at the same time, to remind them, that if it be not used, the offal of the kitchen and the garden will both be thrown away. The most prudent mode is, therefore, always to keep a *store-pig*, of any breed except the Chinese, which you may buy at any age, for the purpose of consuming those offals, on which he may be supported until old enough to be fattened; it being quite immaterial upon what he is fed as a store, provided it be abundant. On this latter point we must, however, warn the owner that the animal should be kept in good condition; and, should there not be enough of substantial kitchen and garden refuse, a plentiful meal of some sort, such as bran or pollard boiled up in the pot-liquor, should be given to him every night before shutting him into his sty; for you may be sure that a half-starved pig will cost more than he is worth in corn to bring him into order for making good bacon."

So far as our experience goes, we give the author the utmost credit for the able manner in which he has treated familiar matters in his book, correcting long prevailing errors, and bringing together such information, "that," as he observes, "a cottage housewife might gather useful hints from its contents, and a duchess would lose nothing by its perusal."

We may add that the work is neatly got up, and is illustrated by several well-executed wood-cuts of poultry and pigeon-houses, rabbit-warrens, piggeries, &c., &c.

A Treatise on the Practical Drainage of Land. By Henry Hutchinson, Land-Agent, Valuer, and Professor of Draining, Walcot, near Stamford. London: Houlston and Stoneman.

The *proper* drainage of land is of the utmost importance to the agriculturist, and should never be neglected. It often happens, though, that in their laudable attempts at draining many farmers are apt to be unsuccessful, because, as no one system will suit every locality, failures are likely to be common; indeed, the serious amount of money expended in improper drainage is almost beyond belief. But a knowledge of true principles is being widely diffused, and, for a man to be ignorant of them now, says little, indeed, for his attention to his own interests.

The work before us is by a practical drainer, and one who is strongly opposed to the notion that furrow, or thorough draining, will suffice for every description of land. He gives his advice to drainers, landlords, land-agents, and farmers; describes his methods of shallow, deep, and bastard draining; states the impediments to draining; and shows how boring should be executed, and the expenses of labour for draining regulated. He also makes some judicious observations on the difference of tiles, prices, &c., adding instructions to those who may wish to have tileries on their own estates. A plate of draining-tools, and four of plans of estates on which the author executed shallow, deep, and bastard draining, accompany the work; which, we think, is a good treatise on that important subject.

Mr. Hutchinson's opinions on water corn mills are thus given:—

"In addition to the various causes and impediments which so often meet our view in travelling across or about the country, there is one great enemy to effectual drainage seen in numbers of situations, and very rarely indeed it happens that you see the land dry in the immediate vicinity of these obstructions—I mean *Water Mills*, or, to speak more properly, *Water Corn Mills*. In the present age we are told daily, that it is requisite to improve the land to the fullest possible extent, and that no steps should be left untried to make it (with the assistance of Providence) produce all it possibly can; the reasons for this increase are shown most fully by experienced and practical men, and that the more we can increase the supply, the better it will be for ourselves and our country. To effect these improvements, most of the writers recommend *draining* as the first and most important step to take, and if this is to be done, all the barriers which exist or oppose its progress must be removed, to ensure its being permanent and effectual. I have generally seen (unless on the line of a river, and even then in some instances) in the neighbourhood of a water-mill, as much land injured as would pay all the rent of the mill, to say nothing of the immense cost which they are at within themselves, both to the owner and tenant; in some instances it would even pay the rent twice over. Experience has, I think, already taught us that they are not wanted, that they may be done without, and that other means than the precarious and changeable ones of water-mills may be made available to supply the wants of the community with flour. And, first, I will take the mill itself, with its supply of water. If a large quantity of rain falls it is too great, and the miller cannot grind, he has *too much water*, consequently the mill stands; if, on the contrary, a season of drought should come on, and last for a time, he cannot grind, he is short of water. In the summer he has too much and too little, from sudden rains and drought, and in the winter he has the same difficulties to contend with from an over supply, or else ice comes down the stream, and again prevents him from pursuing his calling. It may be asked, and naturally, what remedy do you propose in lieu of this uncertain and unstable one? I will answer, the first and greatest improvement made in the present day, viz., *steam*; even the self-same sites may be made available, and used for this purpose, the only addition being the engine-house, and the great source or principal supply being water; and if the coals should be brought forward and made use of as an argument against their adoption, I can only answer, that most millers deliver their large supplies in the market towns, and their wagons may bring the coal as back carriage, and even if this should not answer the purpose, I would recommend some of them to travel into the neighbourhood of Sheffield, to Hackenthorpe, and there witness what man may accomplish by skill and perseverance, at the sickle manufactory of my friend Mr. Staniforth, who, because short of water, husbands his supply in reservoirs, and makes it available over and over again, and although living in a coal neighbourhood, yet makes a great portion of the firing necessary for his engine from the turning lathe where the handles of his sickles are made; these, and such instances as these, teach man in a neighbourhood of scarcity the means of husbanding his supplies and resources. Having thus shown that the supply from this source is a very precarious one, and that other and more certain means may be adopted for getting and ensuring this supply, I think there cannot be an argument for their continuance. It rarely happens but the occupiers of these mills are farmers, and rent their mills with the land; therefore, if as much land can be benefited or improved by the removal of these mills, and as much additional rent gained from this improvement as would make up the landlord's share, no great hardship can arise by their removal, and the tenant, who is generally a farmer as well, if he can by the removal gain as much land as will pay the rent by the improved drainage, cannot be much worse, as it frequently happens when he takes to the mill he has got his business to learn, and will therefore have little difficulty in parting with it again should it be necessary; but if he adopts the plan of 'going by steam,' this will be unnecessary.

"But the principal cause for their removal remains to be told or explained to the owner of property: it does not occur with their use or utility, or with the demand and supply from their work. Generally these mills have a dam-head or reservoir, containing an extra supply in cases of drought and to give additional power very often to the machinery at starting, (as this they can control by means of weir-boards), which reservoir is elevated to a height of 10 and 12 feet above the level of the waters below, and in many instances the level of the water in the dam is as high as the chamber floors in the mill house, whilst on the side of this reservoir the land is still lower and falling rapidly away: and the whole has to be upheld by an embankment on the side of the reservoir. There are other instances where the water is held up by means of weir-boards placed at the height of a foot or more above the level of the ordinary site of the weir, and these are resorted to in cases of expected deficiency in the supply, by reason of drought, and to give them an extra quantity.

"*One* of the evils of thus damming up the water, is to cause it to flow back upon the land for a considerable distance and cover it over with water, whereas, if it had its own free and uninterrupted course, it would contain very rarely more in the river or stream but what might pass along it without injury to any portion of the land, on either side of its banks. This is, then, a great and unnecessary evil, and may easily be remedied. Again; the natural course of streams is so often allowed to run in and out, and by constant washing upon either one side or the other of the banks down the valleys through which they flow, and make so many curves, turnings, and windings, that the least thing or branch washed down with the stream is deposited at these turnings, and by accumulating form impediments to the free course of the water; that this of itself is a nuisance, without having the aid of a water-mill or weir-boards, to assist in these obstructions—the one, after accumulating for a time, will remove of itself, whereas the other cannot be removed without the aid of man. In all cases where these windings and turnings occur, I would recommend the owner or owners of the soil to straighten their course; even though it should be the division or boundary of two parishes or a county; and in cases where the land does not belong to one owner, but to several, to agree to a *give and take line*, so that it may be straightened and the impediments removed. It may be argued, that a great waste of soil may take place from the highlands by this course, from washings from rain, and that if water is allowed to run off too freely in summer time, in some parishes great inconvenience would arise from allowing all the water to escape so rapidly. To this I would answer, that in all cases where it could be accomplished, I would recommend the formation of *Water Meadows*, but not unless the deposit carried in the waters would be likely to benefit the land, as the mere sending water over a lot of land, if cold, strong, and retentive, will not improve it, unless it is accompanied by sufficient mud to cause a deposit to take place; and in this the parties must be guided by the locality of the district, and the neighbourhood from whence their supply is derived.

"This rule will not apply to all lands, as, should the valley lands be of a hot dry nature, the sending a supply of water over them in dry weather will have the effect of not only cooling them, but also of assisting the growth of the herbage upon such lands, and some very important results have taken place from adopting this plan upon land of the description here named.* I cannot here enter into the merits of

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"* The Duke of Portland's water meadows, at Mansfield, Woodhouse, Clipstone Park, Carburton, &c.; Earl Manvers's at Edwinstowe, Palethorpe, Nottinghamshire; all of them hot, dry, sandy land, now useful water-meadows."

water-meadows, but must content myself with so much as comes within the scope of the present remarks upon water-mills, and in making the works for irrigation it will be necessary to put down such stop-gates or sluices, as to convey the water upon the high levels, and gradually float it over the soil intervening betwixt them and the usual water-course, without offering any real impediment to the free run of the water in the river or stream, or of carrying back water upon the high lands. But if the land is so situated, and such obstructions or impediments arise that it cannot be irrigated, either from the inequality of the land itself, or the hostility of parties to such measures being adopted, it may yet be found necessary to place some interruption in the stream, so as to leave the waters for given distances of one uniform height, and to ensure a supply in cases of drought."

The Economy of Waste Manures; a Treatise on the Nature and Use of Neglected Fertilizers. By John Hannam, Hon. Mem. New York State Agricultural Society, &c., &c. London: Longman, Brown, Green & Longmans.

This work was written at the request of the Yorkshire Agricultural Society, for circulation amongst its members; which object having been accomplished, the present edition has been issued for the public, by permission of the Council of that energetic society.

We are glad that this arrangement was made, for it would lessen the utility of the book to limit it to so small a circle; indeed, the information and advice with which it abounds are of such importance to agriculturists, and are so clearly and forcibly expressed, that it is worthy of the most extended circulation.

The subject is divided into three chapters, the first of which is introductory, showing the importance of an inquiry into the economy of waste manures; the second shows the general nature of waste manures, and the sources whence they may be obtained; and the third, the particular nature, value, and economy of waste manures.

The economy of the waste manures of the farm, however, is the primary object with the farmer; and Mr. Hannam, after glancing at the various plans and practices of others, thus lays before his readers what he considers would be the most certain method of attaining that important object:—

"Having now seen upon what principle our system of economy should be based, and how far the various measures proposed are calculated to carry out that principle, we are in a situation to say how, and by what particular means, that object may be generally effected, and the waste manure of every farm properly economized. To accomplish this thoroughly, will require an arrangement more comprehensive than any yet detailed. A careful examination, however, of the advantages and disadvantages of the preceding plans, warrants us in asserting that it may be done, both effectually and economically, by attending to the following suggestions.

" 1.—Let all the buildings round the farm-yard and straw-folds be spouted, and the delivering tubes so arranged that the water may be made to flow into the yard or not, at the option of the farmer. This may be effected by bringing the end of the spout over a drain, which may be left open or closed, as he may wish the water to escape from the yard or not.

" 2.—Let the farm-yard, if possible, be made slightly concave, so that the liquid may permeate the mass and make to the centre.

" 3.—Make drains from every stable, cowshed, &c., and from the kitchen into the manure yard.

" 4.—Select a shady place, if possible on the north side of a hedge or wall, where it is convenient to cart the manure to, when it is removed during winter and spring from the fold. Mark out a surface sufficiently large to hold in a heap all the manure made during winter, and form a compost couch of this size, and two feet deep. Divide this couch into three sections, by two rows of flags or bricks. Make the bottom of each couch incline, so that the liquid from the manure may gradually fall to the front side.

" 5.—Next cut a drain alongside and in front of the couch, with an inlet from each division, through which the liquid may flow into the drain, and fix a sluice at each end.

" 6.—Make a capacious tank, on any convenient side of the couch, and connect it with the drain which runs along the side of the couch, so that the liquid from the couch may run into the tank.

" 7.—Make a drain from the bottom of the farm-yard into the tank, and fix a sluice, so that the liquid from the yard may be let into the tank or not, at pleasure.

" 8.—Fix a pump over the tank, and connect the nozzle with a wooden spout, placed so as to traverse above each division of the couch.

" 9.—Bore a hole through the spout over each section of the couch;

> in each hole put a plug, on the top side of the spout. Also, over each hole, affix on the under side of the spout a leathern nozzle or delivering tube, two or three feet long; by means of which arrangements, the liquid from the tank may be directed to any part of the couch.

"These arrangements may be made at a slight expense, in almost any locality, and worked with little trouble by the farmer, so as to give him a perfect command over his manure; that is, to enable him not only *to preserve the fertilizers which are usually wasted, and to concentrate them in the form of compost or otherwise, at pleasure;* but also to *make and to preserve* this compost for *any length of time,* in *whatever condition he may think fit.*

"Thus, TO PREVENT WASTE, the process is as follows:—The drainage from the sheds and house, which is not wanted in the yard, and also that from the manure when carted out of the yard into the couch is collected in the tank. One section of the couch forms a place of deposit for all the *vegetable refuse* which can be gathered together; while *gaseous waste,* arising from too active fermentation in the cattle-yard, may be prevented by the power which the spouts and sluice drain give us of keeping the manure dry or wet at pleasure; for, be it remembered, that while a little moisture encourages decomposition, a liberal supply prevents or retards it, and also absorbs a large portion of the ammonia which is evolved during the decomposition which does take place,—for ammonia and all its compounds are easily soluble. When, therefore, the manure is taken out of the yard, by placing it in one section of the couch, we can, if we wish the manure to be kept fresh, have a liberal supply of liquid from the tank, and can let it remain in the couch so long as we think fit, by keeping closed the sluice at the junction of the couch and the drain which leads to the tank. By carting over the heap, making it as solid as possible, and covering it up with ashes, charcoal, peat, earth, or any other absorbent, the loss of ammonia will be very slight. When, however, we require the manure in the couch to undergo very quick and active fermentation, and are compelled to throw the manure lightly together, and to drain away unnecessary moisture, our best method of preventing *gaseous escape* is to cover the heap lightly over with ashes, sawdust, peat, charcoal, or other absorbents, and to keep this coating well saturated with sulphuric acid and water, say a weak mixture of ten gallons of water to one of acid. Any other acid which may be obtained at a cheaper rate, will act as well, as the ammonia, being an alkaline gas, will combine with any acid, and form a neutral salt. When enough acid has been applied, very little smell will escape—the principal part of the ammonia being absorbed by the spongy coating, (for instance charcoal absorbs ninety times its own volume of ammonical gas, and thirty-five times its volume of carbonic acid gas,) or held in combination with the acid. Acid in combination with a base for which it has less affinity than for ammonia, will also serve the purpose of fixing the ammonia; as, when this is done, the original salt is decomposed—the acid combining with the ammonia of the manure, and the base being set free. Thus gypsum (sulphate of lime) will answer the purpose—the sulphuric acid of the gypsum leaving the lime and uniting with the ammonia. My own observation teaches me to prefer acid to any salt, as it is equally cheap, more easily used, and is, therefore, likely to be more generally efficacious.

"TO COMBINE THE VARIOUS WASTE MATTERS *with our ordinary compost*, the system affords us every facility. Thus, the *liquid* from all the buildings flowing into the tank, we have nothing more to do than to carry our manure from the yard to one of the beds of the couch, where we can—by taking the plug from the spout over the portion we wish to saturate—pump upon it, if we think proper, the whole contents of the tank. With this compost we can also mix the *waste vegetable* and *other refuse*, which has been collected in the other sections of the couch, or can, by opening the spout from the pump, make a compost of it and the liquid from the tank only. The *gaseous matters* are in these or other cases preserved, and combined with the bulk of the compost, by the means before detailed.

"TO MAKE and PRESERVE *our compost manure in whatever condition we may wish it to be, for any length of time*, is another of the advantages which, we have said, the system gives us, and it is thus secured. In the farm-yard, by opening the spouts and closing the drain leading to the tank, or *vice versa*, we can *retard* or *accelerate* the decomposition of vegetable matter; after which, when it is *placed on the couch*, we can preserve it in whatever condition may be desired, or prepare it for immediate use. Thus, if we wish to keep one portion of our manure fresh for a length of time, we have only to press it well down, and to keep it thoroughly wet with the liquid from the tank, and so covered with earth or vegetable refuse, that the atmosphere cannot get access to it, and our object will be effected. Another portion, which we wish to *decompose thoroughly*, we can place in the other section of the couch; throwing it lightly together, and frequently applying the liquid from the tank. In this case, the drain from the couch should be open, in order that it may return to the tank all the liquid that the compost does not absorb, and thus keep the manure from being too wet. Again, *to make our compost in as good condition as it can be* for use, we can saturate it thoroughly with the liquid from the tank, and apply it in as wet a state as possible. By this means we excite a fresh action in the manure, which is of immediate benefit to the young crop, (especially to turnips and other green crops,) and convey a stock of liquid food with scarcely any extra carriage. My own experiments, those of the late Arthur Young, and the practice of the Flemings, (who moisten the small heaps of compost laid out at regular distances in the field, and as soon they begin to heat plough them in,)* are proofs of the beneficial effects of this process.

"In executing these various processes, the means which have been laid down for the prevention of gaseous waste may be employed. And, lastly, after having *prevented all waste—concentrated as far as possible the fertilizing matters of the farm in our manure heaps—preserved them as long as we think proper—and applied in the condition best adapted* to promote vegetation, our *tank* supplies us with the means of applying a *liquid* dressing to any light sandy soil, or to any crop which we think requires it, or whenever our solid matters for making compost are exhausted.

"Should the farmer be *compelled* to form a manure heap in the field, I would advise him by no means to carry it to the field fresh, and to let it decompose there, as is generally the case, before he uses it. Before he takes it from the couch, he should have it nearly as rotten as he wishes it to be. He should wet it well with the drainings, and, when he carries it to the field, cover it up with road scrapings, earth, &c. At the bottom of the heap, too, there should be a good bed of earthy matter laid. In this way the manure will come out for use almost as fresh as when put in, the atmosphere having had no access, and the earth at the bottom and on the top absorbing the liquid and gaseous matters that would otherwise have escaped."

"* Agriculture of the Netherlands. Royal Journal, Vol 2, p. 57."

A Catechism of Agricultural Chemistry and Geology. By James F. W. Johnston, M.A., F.R.SS.L. & E. Edinburgh and London: Blackwood & Sons.

The Professor has written the above work for the more speedy improvement of agriculture; and with that view has dedicated it "to the schoolmasters and teachers of Great Britain and Ireland; believing that no class of men possesses in so high a degree the power of promoting an object so important to all." And well the Catechism is calculated to realize his views, for the contents are made plain to the meanest capacity. But perhaps we had better extract a portion of it; and further comment will be needless. We will therefore quote the part on lime, a substance of extensive use in farming operations:—

"Q. What does limestone consist of?

"A. Limestone consists of lime (quicklime) in combination with carbonic acid.

"The teacher may here revert to the properties of carbonic acid, and examine his pupils upon what they had previously learned upon this subject.

"Q. What name is given to limestone by chemists?

"A. It is called by chemists *carbonate of lime.*

"The teacher may take this opportunity of verbally explaining the kind of terms by which chemists denote combinations of the sulphuric, phosphoric, and carbonic acids with potash, soda, lime, and magnesia,—that when carbonic acid combines with either of these substances it forms a carbon*ate,* phosphoric acid a phosph*ate,* sulphuric acid a sulph*ate.* Hence, that *phosphate of lime* denotes a combination of phosphoric acid with lime, *sulphate of soda* a combination of sulphuric acid with soda, and so on.

"Q. Are there not many varieties of limestone?

"A. Yes,—some soft, such as chalk,—some hard, such as most of our common limestones,—some of a yellow colour, like the magnesian limestones, which contain magnesia,—some pure white, like the statuary marble,—some black, like the Derbyshire black marbles, and so on.

"Here it would be advantageous if the teacher could exhibit these and other varieties of limestone.

"Q. What is marl?

"A. Marl is the same thing as limestone, namely, carbonate of lime, only it is often in the state of a fine powder, and often also mixed with earthy matter.

"Q. What is shell sand?

"A. Shell sand, or broken sea-shells, is also the same thing almost exactly as common limestone.

"Q. Can these marls and shell-sands be applied with advantage to the land?

"A. Yes, either as a top-dressing to grass lands, and especially to coarse, and mossy grass,—or they may be ploughed or harrowed in upon arable fields,—and especially they may be employed with advantage and large quantity to peaty soils.

"Q. Can they not be used also in making composts?

"A. Yes, mixed with earth or vegetable matter, or with animal matter, such as fish refuse, whale blubber, &c., and even with farm-yard dung they will often produce very good effects.

"Q. How would you ascertain the presence of lime in a soil or in a substance supposed to be a marl?

"A. By putting a little of it into a glass, and pouring upon it either vinegar or weak spirit of salt (muriatic acid). If any bubbling up (effervescence) appeared, I should say that lime was present.

"Q. To what would this bubbling up be owing?

"A. It would be owing to the escape of carbonic acid which the soil or marl contained.

"Here the teacher may perform this experiment, by pouring weak acid upon marl or powdered chalk, and show the bubbling up. He may further convince his pupils that the gas given off is really carbonic acid, by introducing a lighted taper into the glass, when it will be extinguished.

"Q. What takes place when limestone (carbonate of lime) is burned in the kiln?

"A. The carbonic acid is driven off from the limestone by the heat, and the lime alone remains.

"Q. What is the lime called in this state?

"A. It is called burned lime, quicklime, caustic lime, hot lime, lime-shells, &c.

"Q. What weight of quicklime or lime-shells is obtained from a ton of limestone?

"A. A ton of limestone yields about 11¼ cwts. of quicklime.

"Q What takes place when water is poured upon quicklime?

"A. The quicklime drinks in the water, becomes very hot, swells up, and gradually falls to powder.

"The teacher may exhibit this effect of water upon lime, and may satisfy his pupils that the heat produced is great, by showing that it will sometimes set fire to gunpowder placed upon a dry portion of the lime, or will heat a cold baked pie when put in the middle of it. He may also explain to them that it is the heat thus given off which occasionally sets fire to the sod with which heaps of lime-shells are sometimes covered up in the fields.

"Q. What is this pouring of water upon lime, so as to make it fall, usually called?

"A. It is usually called slaking the lime, and the lime is called slaked or slacked lime.

"Q. Does the quicklime increase in weight when slaked?

"A. Yes: one ton of pure quicklime becomes 25 cwts. of slaked lime.

"Q. Does quicklime fall to powder of itself when left exposed to the air?

"A. Yes, it absorbs water from the air, and gradually falls to powder.

"Q. Does quicklime drink in (absorb) anything else from the air?

"A. Yes, it gradually drinks in carbonic acid from the air, and returns at length to the state of carbonate.

"The teacher may here satisfy his pupils that lime does thus absorb carbonic acid from the air, by pouring a little lime-water into a tumbler, and showing them that an insoluble film of white *carbonate of lime* forms on the surface. This experiment may be exhibited for the purpose of showing two things; *first*, that carbonic acid exists in the air; and, *second*, that quicklime absorbs it. Lime-water is made by pouring water upon quicklime in a bottle, shaking well up, corking, and allowing the lime to settle to the bottom.

"Q. When it has thus returned to the state of carbonate, is it better for the land than before it was burned?

"A. Yes; it is in a state of far finer powder than could be got by any other means, and can thus be more thoroughly mixed with the soil.

"Q. What is it usually called when it has thus returned to the state of a carbonate?

"A. It is usually called mild lime, to distinguish it from the quick or caustic lime.

"Q. Does quicklime act in a different way upon the land from mild lime?

"A. It acts very much in the same way, but more quickly.

"Q. How do they both act?

"A. They act by supplying the lime which all plants require as part of their food—by combining with acids in the soil, so as to remove the sourness of the land—and by converting the vegetable matter into the food of plants.

"Q. Would you bury lime deep, or would you keep it near the surface?

"A. I would always keep it near the surface, as it has a natural tendency to sink.

"Q. To what land would you apply quicklime rather than mild lime?

"A. I would apply quicklime to peaty soils, to heavy clay soils, to arable lands which are very sour, and to such as contain a great deal of vegetable matter.

"Q. Will the same quantity of lime produce the same or a greater effect upon drained than upon wet land?

"A. The same quantity will produce a greater effect upon drained or naturally dry land, than upon wet land.

"Q. Would you apply lime in large doses at long intervals, or in small doses at shorter intervals?

"A. If I applied a large dose of lime at the beginning of my lease, I would apply smaller doses at the end of each *rotation*, or at the end of every second rotation, to keep up the quantity of lime in the land.

"The teacher may here explain the meaning of the new word *rotation* and may illustrate it by reference to the course of cropping in his own or neighbouring districts; and if he make himself master of the theory of rotations (see the Author's *Lectures on Agricultural Chemistry and Geology*, page 717), he may give his pupils correct notions upon this subject, which they will seldom forget in after-life.

"Q. Why does lime require to be repeated?

"A. Chiefly for three reasons; *first*, because the crops eat up and carry off a portion of the lime; *second*, because a portion of it sinks into the subsoil; and, *thirdly*, because the rains are always washing a portion of it out of the land."

We are well satisfied of the utility of the book to all farmers ignorant of chemistry and geology; and that if they will only study it as it deserves to be studied, the "more speedy improvement of agriculture" must certainly follow.

WEST SUFFOLK AGRICULTURAL ASSOCIATION.

[From the "Bury Post."]

The twelfth annual meeting was held at Bury, on Friday, the 14th of June. The show of short-horn cattle and sheep, both Down and Leicester, was excellent, and the prize horses also were very superior animals. Amongst the extra stock, some short-horns, exhibited by the Rev. D. Gwilt, a Suffolk heifer, from Mr. G. Bevan, and an entire colt, bred by Mr. James Clover, of Needham, were much admired. A number of prizes were awarded to labourers whose period of service varied from 12 to 53 years; and also for the best cultivated farm, and for stock. A chaff-cutter was exhibited by Mr. Boby, which received the highest commendation from practical farmers. This machine, which is quite new in its construction, and very simple in its arrangement, is so effective, that a man, with no great exertion, will cut 40 bushels of chaff per hour; and a horse will accomplish 200 bushels. It is the production of Mr. Gardener, of Banbury, whose turnip-cutter has already made its way into such extensive use.

In the afternoon, between 80 and 90 gentlemen dined together at the Guildhall. Captain Heigham took the chair, being supported right and left by H. Wilson, Esq., Colonel Fitz Roy, Captain Wilkinson, H. J. Oakes, Esq., R. Bevan, Esq., the Revds. G. Bidwell, D. Gwilt, H. Mears, A. Colvile, W. Wayman, Col. Ray, &c., &c. In reply to the toast of his own health, Captain Heigham made some observations, which led to a discussion on the cultivation of flax, and the plant called "Gold of Pleasure." He thought the cultivation of flax would have the beneficial tendency of bringing this country into closer communication with Ireland, where flax was cultivated to a great extent.

Mr. Gower said he had entered most cordially upon the cultivation of flax on its introduction by Mr. Warnes, but he now felt satisfied that any gentleman who intended to grow it should first ask himself the question—"Do I intend to grow flax or to grow linseed?" It was well known that Mr. Warnes advocated the principle of growing both, but he (Mr. G.) had paid considerable personal attention to it (having long been a practical farmer), and he was satisfied, that if a man tried to grow both at one time, he would fail in both. On some description of land, he thought either might be cultivated with profit. If the flax were sown early, and pulled in a green state, he was sure that more weight of flax could be grown per acre. But he was afraid it would be found an exhausting crop. He had seen two or three instances of this, one of which was very striking: an experiment having been tried by the President of the Norfolk Flax Association, who had sown it by the side of turnips or mangel, and had a large quantity of liquid manure put on it. It was pulled in a green state, but so exhausting was it to the land, that fourteen loads of manure per acre were put on the land where it was pulled off. He had cultivated flax against oats and barley before turnips, and he had found his turnips after flax were worth only 30s. per acre, while those after oats were worth £4. Still there was land unkind for turnip, where a portion of flax might be profitably grown. It struck him as a fact, that five or six coombs of linseed would raise more beef than an acre of turnips—therefore it became a relative question, what state the land would be left in after a crop of linseed, or a crop of turnips? Of the compound he could speak most favourably, and was sure that every one who had tried it would continue to use it. The butchers had expressed their satisfaction at the beasts fatted with the compound, and would buy them in preference to others. It did not produce fat as oil-cake did, but flesh, which they all knew, in connection with fat, was most valuable. It was found in cooking, that the waste in meat fed on oil-cake was two-thirds more than in that fed on compound.

The Chairman would merely observe, that, in Ireland, in the cultivation of flax, the labour was done by the spade, which made a great difference, and the plough was but little known.

Mr. Gower said, he had endeavoured to find a market for some of his flax which last year produced seed—he had even sent it to Ireland—but he could not find a market to pay him. If they could get machinery to bear on the scutching of flax it might pay, but under the present system it would not. He had grown forty stone per acre; it cost him 3s. per stone for scutching it, and after that he could only get 5s. for it, and his land was left minus straw. He had grown flax instead of wheat, but if he compared eight coombs of wheat with five of flax, he found he was a great loser.

The Rev. D. Gwilt said, last year he tried the Gold of Pleasure (the *Camelina Sativa*), which came recommended by the authority of a most scientific botanist; he had sowed it on a twelfth of his land, and it produced a most beautiful crop, averaging thirty-two bushels per acre, and the seed was in the finest order, and as clean as possible; he was, therefore, extremely anxious to recommend the plant to his brother farmers. He was convinced that it would be impossible to grow flax and linseed at the same time with profit. They had heard of the difficulty of getting rid of the flax when it was grown; this was the case with Mr. Webber, who had told him, that the expense of harvesting and threshing it was enough to scare any one out of growing it, besides its leaving the land in an exhausted state, and after all there being no good market for it. The Gold of Pleasure could be taken between the wheat stubble fallow and the succeeding turnips. Last year a farmer of Essex planted a small quantity of it; it produced a good crop, and he succeeded in afterwards having a good crop of turnips. He tried the plant upon the very light part of his blowing sandy turnip fallow, and now it was the best crop on his farm; it was standing up high, and would be ready to harvest in three or four weeks. The seed would make oils in great request, as the common portions would burn in lamps, the second quality more refined produced an oil much used in the manufacturing districts, and the still more refined an oil which the artist required, while the residue would make a compound with corn. He would observe, that where he last year grew the plant, the wheat was now equally good with that of the other parts of the field, therefore he concluded that the crop was not an exhausting one. He had the authority of several botanists, to whom he had shown the root, that it would never exhaust, and therefore he could safely recommend it. As to the value of the seed, he would inform them that, in London, scientific men were sending out agents to the Continent to buy every bushel of it they could get. Last year, when he used it as a compound, the cows found no difference, and it made the cream and butter as sweet as before. He had tried it with sheep in the beginning of May—weighing those fed on oil-cake and those fed on the compound of the Gold of Pleasure, taking the aggregate weight of each lot, in which, of course, there was individual difference. When he last weighed them, the increase was precisely the same in each of the sheep which had the Gold of Pleasure, while in those which had oil-cake it was one-half less. He should go on with the use of it, and he would now merely add, that he should be happy to endeavour to find out whatever might be useful to the agriculturists.

This ended the discussion. The following letter appeared in the same paper, with respect to linseed:—

SIR,—Having cultivated linseed within the last four years for the purpose of fattening cattle and sheep, in conjunction with corn, I can fully confirm Mr. Gower's statement of its superiority for that purpose to the refuse of linseed formed into cake. But my experience as to its culture and exhausting effects upon the land, leads to a different result from that of Mr. Gower. The soil on which I have grown it is a loam, largely impregnated with brick-earth, with a subsoil of from twelve to eighteen inches of the latter, resting on a chalk-stone clay, and may be described as a heavy turnip land requiring drainage. My custom has been to grow it after Swedish turnips (subsoil ploughed for in the previous winter) fed off with sheep, and when sown at the same period and under the same circumstances and cultivation, has always yielded as good a remuneration as barley or oats. Where I have taken beet-root after in lieu of layers, that crop has been the best where the linseed grew, and the red clover has always planted best and produced the most after linseed. The crops of wheat which I have taken after these clovers succeeding linseed and barley are equal to each other. These experiments lead me to conclude that linseed is not an exhausting crop, cultivated as I have stated.—Yours faithfully,

F. DENTON.

RUSHBROOK GREEN FARM, June 10, 1844.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The weekly and monthly proceedings of the Council of the above-named important society have latterly proved of such a very interesting nature, that we have been induced to make copious selections from them. We know we cannot better serve the interests of agriculture than in assisting to spread the valuable information that is there elicited; and, we may add, that it is a source of much gratification to us to see these satisfactory results.

A weekly Council was held at the Society's House, on Wednesday, the 28th of February.

Cottage Tracts.—The Secretary reported to the Council the distribution of 15,000 copies, during the past two years, of the articles on Cottage Gardening, by Mr. Main, and on Cottage Economy and Cookery, by Mr. Burke, re-printed from the Journal in the form of distinct tracts, and sold to Members at the prime cost of one penny each. The Council ordered that the question of a further re-print of 6,000 impressions of these tracts should be referred to the Monthly Meeting, on the 6th of March.

Drainage.—Mr. John Clarke of Long Sutton, Lincolnshire, informed the Council that little or nothing having yet been done to improve the drainage of the lowland district, near Wisbeach, in which he resided, it had been his wish to draw public attention to the subject; and he had accordingly drawn up a work, of which he then presented a copy to the Council, on Thorough Draining, in principle and practice, with its advantages and simplicity as applied to a dead level; and addressed to the owners and occupiers of the soil in parts of Holland, in the county of Lincoln, and the great level of the Fens: for which the Council ordered their best thanks to be given to Mr. Clarke.

A monthly Council was held at the Society's house on Wednesday, the 6th March.

His Excellency Count Reventlow, the Danish Minister in London, addressed a letter to the Council in favour of M. Tesdorpf, a gentleman of large landed property in Denmark, who had come over to England for the purpose of making himself personally acquainted with the agricultural improvements of this country; and for whom, on account of his high character, and the active usefulness of his pursuits at home, his Excellency ventured to claim for him, as a distinguished foreigner, the favourable reception of the Society. The Council immediately admitted M. Tesdorpf to their sitting, and unanimously invited him to attend their weekly meetings whenever it might suit his convenience to do so, during his residence in England.

Flemish Plough.—The old Flemish plough, procured as a present for the Society, by the late Rev. W. L. Rham, and imported by his executor, David Jardine, Esq., having been released from bond in the Custom-house, was this day submitted to the inspection of the members. The high value set by Mr. Rham on the properties of this plough for use in light lands, and the difficulty he experienced, when preparing for the Society's Journal (Vol. II, page 58) his paper on the Agriculture of the Netherlands, in endeavouring to convey by an engraved illustration the peculiar curve of the sheet-iron turn-furrow, in which its excellence consisted, were the reasons which induced him to procure from the Continent an actual Flemish plough, for the museum of the society. This simple plough, says Mr. Rham, has been adopted or imitated in most countries, and for light soils without stones none can surpass it. The old Rotherham plough, which was improved by Small, was only a copy of it. In France and Switzerland it has almost superseded the old ploughs of the country, wherever improvements have been introduced; and, with a few modifications to adapt it to different soils, it has re-appeared in England as an improved plough.

Rotation of Soil.—Mr. Colman, the agricultural commissioner of Massachusetts, and at present engaged in an agricultural tour through Europe, having presented, at the previous council, the model of a new implement, transmitted from Boston, in the United States, to this country, by Mr. Isaac Clapp, for which the Council voted their best thanks and ordered all shipping charges to be paid, has laid before the Society Mr. Clapp's own account of his invention. This implement consists essentially of two rollers confined loosely on a fixed axle, and followed closely by an attached scarifier, formed by a single row of strong tines. Mr. Clapp states: "I have used this implement on newly-ploughed sward-land to great advantage. The greatest value which I consider it as possessing consists in the dispatch with which it works, and the perfect control it gives one over the soil, producing a rotation of soil, which, in my opinion, is as advantageous as a rotation of crops. The working of the soil in rotation can be best effected by the use of the pulverizer, the second year, in place of the plough; leaving the sod to decompose; and then sowing grass seed, or a second crop, on the surface given by the first ploughing. If seeded to grass, the second year, and after the ground has acquired a sward eqnal to that first turned under, it may be then re-ploughed, bringing to the surface a vegetable mould that will ensure an abundant crop without the aid of manure. By cultivating the soil in this manner, we have always one vegetable mould at work, and one at rest."

Trial of Manures.—Mr. Moseley, of Glemham House, Saxmundham, Suffolk, communicated to the Council the following result of his comparative experiments with manures. As the cost of manure is of essential importance to farmers, an equality of price, or nearly so, has regulated their application, which took place on the *same* day, early in last March, and was followed by frequent rain. The cost of each sort, excepting that of the nitrate of soda (which was put on the land by mistake, at the rate of 28s. per acre), was about 16s. per acre, exclusive of carriage and sowing. The whole produce of grass was weighed in my presence, on the day after it was mown and strown; therefore the weight must be deemed to be that of *grass*, not of hay.

	Tons.	Cwt.
Nitrate of soda: 131 lbs.; cost 28s. per acre; and produced	4	12
Sulphate of ammonia: 58½ lbs.; cost 15s. 6d.; and produced	4	10
Guano: 131 lbs.; cost 16s. 7½d.; and produced	4	12
Carbonate of ammonia: 21½lbs.; cost 18s.; and produced	3	18
Saltpetre: 42 lbs.; cost 16s. 6d.; and produced	3	3

A weekly Council was held at the Society's House in Hanover Square, on Wednesday, the 20th of March.

Burnt Clay.—His Grace the Duke of Richmond having transmitted to the Council the results of Mr. Page's experience in the application of burnt clay, the communication was read to the meeting. The report stated the length of time during which the burnt clay had been used on the farm, the mode in which it had been prepared, the quantity applied to the land, the time of year, and to what crops, concluding with the following statement of its effects:—"I have known," says Mr. Page's servant, "that in a wet cold season, it beats all other manure for turnips: of course it keeps our stiff lands from congealing together, giving the seed power to vegetate stronger. I never earthed any without seeing an improvement made. All I can say about it is, that it certainly answers on wet, cold lands: it will increase the barley crop two coombs per acre. I do not think it answers so well for wheat as for barley. It has been used on the farm for 20 years upon a small scale, but for the last six years very plentifully: last year, had the season allowed me, I should have burned 600 loads."

A weekly Council was held at the Society's House in Hanover Square, on Wednesday, the 27th of March.

Tussac Grass.—Sir William Jackson Hooker, K.H., Director of the Royal Botanic Gardens at Kew, in reply to an application which had been made to him on the part of the Members of the Society, who in consequence of the publication in the *Journal* (vol iv., part 1, page 17) of an extract from Governor Moody's Despatches to Lord Stanley, having reference to the *Dactylis cespitosa,* or Tussac grass, growing on peat bogs in the Falkland Islands, were desirous of obtaining small portions of the seed for trial, favoured the Council with the following communication on the subject:—"I should be but too happy, were it in my power, to send you seeds or plants of the Tussac grass. Some of the latter were living on their arrival in England; but they soon sickened and died. The seed, to a great extent, has been given away and sown in the Royal Gardens in all kinds of situations—but not a single grain has germinated any where. Indeed, I have reason to believe, that in such a climate as that of the Falklands, and with a great disposition to increase by the roots, the Tussac seldom produces perfect seeds; not always, certainly; because, while my son was with the Governor there, he raised seeds in the Government garden. I do not despair yet of introducing it. I have a "Ward's plant-case" now in the Falklands, and have given instructions to have good tufts of the grass with roots planted in this case and *established* before the box is sent home. Should I be successful, you may rely upon it I shall not forget the Royal Agricultural Society." The Council ordered their best thanks to be returned to Sir William Hooker for this communication.

Bone Sawdust.—Messrs G. W. Lees & Co., of 47, Fleet-street, transmitted to the Council a box of sawdust obtained from bone by means of the lathe in the ordinary process of button-making. Mr. Fowlie, agent to Sir William Heathcote, Bart., M.P., of Hursley Park, near Winchester, had found the bone sawdust applied to turnips far superior to any other manure he had made use of for that purpose; and Mr. Heard, of St. Margaret's, near Ware, states—"Two tons and a half of the bone sawdust were applied upon ten acres for turnips. The crop was excellent. The rest part of the field, 15 acres, was manured in the usual way, with farm-yard manure, and the crop was an entire failure, after sowing even a third time. The fly did not attack the part done with the bone sawdust, but totally destroyed the plant where the farm-yard manure was used.

Bones, Guano, and Ashes.—Mr. Slaney, of Walford Manor, near Shrewsbury, communicated to the Council the results obtained by Mr. T. C. Eyton, a member of the Society, residing at Donerville, in the county of Salop, in his experiments on artificial manures, especially on bones dissolved in sulphuric acid, embodied in a lecture delivered by that gentleman to the members of the Wellington Farmers' Club, and at their request printed and published, at a small nominal price, by Simpkin, Marshall & Co., of London. Mr. Eyton, having detailed various experiments made by other parties, proceeds to those instituted by himself, and which are of a very interesting character. "The manures and mixtures of manures I tried," says Mr. Eyton, "are calculated per acre. The turnips, which were Skirving's Swedes, were mildewed, or probably the crops would have been larger. The largest crop is that raised upon guano and wood ashes, at an expense of about two pounds four shillings per acre, or at three half-pence for each bushel of turnips; the cheapest, that raised upon bone-dust dissolved in sulphuric acid, at an expense of eight shillings and five-pence halfpenny per acre. Both guano and muriate of ammonia were tried by themselves, and also mixed with gypsum, at the rate of 220 lbs. to the acre; where the gypsum was applied with muriate of ammonia, the crop was worse than where the muriate of ammonia was applied alone; where gypsum was applied with guano, the crop was only better by six cwts. in the acre than where none was applied, which may have been caused by the vicinity of a drain. We may, therefore, I think, fairly conclude, that gypsum is no manure for turnips, whatever it may be for clover and other crops. I confess, I am much puzzled by this result, as from an analysis of the subsoil of the field, by the Messrs. Blunt, of Shrewsbury, it appears that it contains merely a trace of sulphate of lime, or gypsum; from which I should, until these experiments were tried, have supposed that gypsum would have had a powerful effect. Muriate of ammonia does not appear to answer well in the quantity used, and if larger quantities were applied it would be too expensive for the farmer.

No. of Exp.	*Description of Manure.*	*Cost per acre.*			*Weight of crop per acre.*		*Manure per acre.*	*Cost per bush.*
		£	s.	d.	Tons.	cwt.	Bushels.	d.
I.	165 lbs. of muriate of ammonia .... 220 lbs. of gypsum....................	1	10	11	7	1½	154	2½
II.	330 lbs. of guano	1	13	0	15	1	308	1¼
III.	165 lbs. of muriate of ammonia............	1	6	6	8	16	192½	1¾
IV.	330 lbs. of guano .... 220 lbs. of gypsum................ ...	1	17	5	15	14¾	346½	1½
V.	330 lbs. of guano .... 11 bushels of wood-ashes, at 1s. ℔ bushel	2	4	0	17	7¼	423½	1¼
VI.	165 lbs. of muriate of ammonia .. .. 11 bushels of wood-ashes..............	1	17	6	14	19¾	385	1¼
VII.	1322 gallons of liquid manure (consisting of urine and soap-suds)	——			11	9½	269	—
VIII.	66 lbs. of bones .... 8¼ qts., or 33 lbs. of sulphuric acid .... 550 gallons of water	0	8	5½	14	6	346½	0¼
IX.	484 lbs. of bone-dust	1	1	7½	14	19¾	308	0¾

"In the above calculation, fractional parts are not included. The following is an analysis of the subsoil. I was told by a former tenant of the field that it would not grow turnips; it was, however, drained shortly before the turnips were sown.

"One hundred parts of the soil were found to contain—

Water	11	parts.
Silica (or sand)	70	,,
Alumina (or clay)....................................	15	,,
Red oxide of iron	1½	,,
Carbonate of lime....................................	1½	,,
(Loss)	1	,,
A trace of sulphate of lime, in weight not appreciable....		
	100	

The proportion of silica is that yielded by the soil after the largest stones or pebbles are removed from it. The seed was sown on the 17th of May, 1843, and the turnips pulled and weighed on the 22nd of November. The plants all came up together; nor was there any perceptible difference in their appearance on the 27th of May. On the 14th of June, No. II appeared to take the lead, I, VII, VIII, looking the worst, and being more backward than the others; on the 20th of June they were horse and hand-hoed. Nos. IX, X, VIII, IV, V, were equal in appearance to No. II; on the 21st of July No. V looked best, and No. I the worst of all." Mr. Slaney then proceeded to call the attention of the Council to the comparative cost of the different manures tried by Mr. Eyton, and stated in the table just read to them; from which it appeared that the bones and sulphuric acid cost only one farthing per bushel on the turnips grown, whilst the other manures cost from three to ten times as much. The soil on which they were raised was a tolerably light loam, and, as Mr. Eyton had stated, had been recently drained. The bones used were ground into powder, and were the fine siftings from collections of bones. This bone powder being put into an earthenware vessel, a small quantity of water was first poured over it, and the sulphuric acid then added; when the whole mixture was stirred with a stick until the bone-powder was entirely dissolved, and the solution being diluted with more water was ready for use. It was applied to the land as liquid manure, either by means of a common watering-pan, or the distributing-trough of a liquid manure-cart, care being taken that the liquid should fall on the rows of turnips just sown. This process, Mr. Slaney understood, was repeated after the plants came up; and in submitting this brief statement of Mr. Eyton's experiments to the Council, he trusted that the interesting results obtained might stimulate other Members of the Society to extend the inquiry to other artificial manures with a view to the determination of their economical application and practical value. Mr. Davenport, of Capesthorne, near Congleton, Cheshire, fully corroborated the statement made by Mr. Slaney, in reference to the mode in which the mixture of sulphuric acid and bone-dust should be conducted; and as some danger to the inexperienced operator was to be apprehended from a different mode of proceeding, it was desirable that great care should be taken not only to effect the solution of the bones, but also to add the sulphuric acid in so cautious a manner as to prevent its accidental ejectment from the vessel in consequence of the violence of chemical action. With regard to the abstract value of sulphuric acid and bones as a manure, he adduced the opinion of Mr. Burness, of Manchester, a pupil of Professor Liebig, and who had been delivering a lecture or two in Cheshire on agricultural chemistry, as unfavourable to its exclusive use; for although it was no doubt a powerful and excellent restorer of land, it could not be considered as a permanent and efficient manure for a rotation of crops, unless combined with other substances. Mr. Davenport preferred bone manure in a dry, concrete form, to its being in the state of liquid solution; and had found a mixture of half a ton of bone powder and two hundred weight of guano answer extremely well. The African guano just imported was offered at £3 per ton less in price than the Peruvian, but he understood that it contained a correspondly greater amount of water in its composition. Mr. Townshend Mainwaring, M.P., of Marchiviel Hall, near Wrexham, Denbighshire, stated, that with him the application of the sulphuric acid and bones had been attended with decided injury rather than advantage to his crops: a result, he had since learned, occasioned probably by the bones employed being left in fragments of too large a size, and consequently not in state to be at once subject to the chemical action of the sulphuric acid as their solvent; his land having thus not only lost the advantage of the nutriment contained in the bones, but received on the contrary the injury of a strong, corrosive, and unneutralized acid. Mr. John Raymond Barker, of Fairford Park, Gloucestershire, communicated the results of two experiments he tried last year on the effects of ashes, both singly and mixed with guano, on the growth of Swedish turnips. The first experiment was made by aplying a mixture of 40 bushels of coal ashes and 20 bushels of wood ashes, per acre, to a bad piece of heavy land, sown with Skirving's purple-top Swede, drilled in rows 18 inches apart. The turnips on being cleared of their tops and tails were weighed, and found to give an average of 39 tons 15 cwt. to the acre. The other experiment was made in a field of good light land, manured with 25 bushels of coal ashes and one cwt. of guano per acre, and sown with Skirving's purple-top, in rows 27 inches apart. In this experiment the turnips were much larger than in the former, and Mr. Barker expressed his regret that the result had not been weighed, as the crop was, without exception, the finest he had ever witnessed, the turnips being of excellent quality and of immense size.

Prizes for Essays.—Mr. Burke gave notice, that he should move, at the next monthly Council, "That silver medals should be granted to the authors of essays not entitled to a first prize, but which are yet thought by the Judges to be worthy of commendation: all such essays to remain the exclusive property of the Society, and to be made use of in such manner as the Society may think proper."

A monthly Council was held, at the Society's house in Hanover-square, on Wednesday, the 3rd of April.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, presented the monthly Report of the state of the Funds of the Society; from which it appeared that the invested capital amounted to £7,700, and the current cash balance in the hands of the bankers, on the 31st of March, to £1,742.

Discrimination of Soils.—Mr. Pusey, M.P., Chairman of the Journal Committee, reported the adjudication of the Society's prize of £50 for the best essay on the indications which are practical guides in judging of the Fertility or Barrenness of Soils, to Mr. John Bravender, land-surveyor, Cirencester, Gloucestershire.

Essays for 1845.—Mr. Pusey laid before the Council the Schedule of the Subjects, and Amount of Prizes, proposed by the Journal Committee, for the Essays of next year, namely:—

£10. On the advantages of one-horse carts.
£10. On the best method of fattening cattle.
£20. On the best method of reclaiming heath-land.
£50. On the agriculture of Nottinghamshire.
£50. On the agriculture of Cornwall.
£50. On the agriculture of Kent.
£20. On the cheapest mode of establishing a tile-yard.
£20. On catch-meadows.
£50. On the Dutch method of curing butter.
£20. On fences.
£20. For the best experiment in agriculture.

Heavy-land Implements.—The Hon. M. W. B. Nugent, of Higham Grange, near Hinckley, Leicestershire, suggested to the Council, as the result of his close and constant attention in effecting the cultivation of 400 acres of some of the stiffest and most unworkable soils in that county, that the land at Southampton upon which the ploughs for working the stiff clay are to be experimented should, as soon as possible, be ploughed in preparation for the trial, and not again interfered with, but allowed in that state to retain its moisture, until the ploughs to contend for the stiff-clay prizes shall be brought to plough it, *across*, upon the day of such trial. A clean furrow-slice, under these circumstances, upon stiff, retentive clay, previously ploughed and suffered to keep all the damp in it, being, in Mr. Nugent's opinion, the criterion of a perfect plough for land of that character; so that it may be worked early in the spring, and prepared for green-cropping, by such a plough as will not gather the stiff soil before the mould-board, and run it before the mouth of the plough in large lumps; every single plough, he added, hitherto constructed, being guilty of this greatest of faults in working stiff, cold, retentive clay in a condition midway between wet and dry. The Council referred this suggestion to the Stewards of the Trial of Implements.

Appointment of Seedsmen.—Mr. Miles then brought forward the motion of which he had given notice, for the official appointment of Messrs. Thomas Gibbs & Co. as the recognized seedsmen of the Society. Mr Shaw seconded the motion, which, on being put from the chair, was carried unanimously, and Messrs. Thomas Gibbs & Co., of Half-Moon Street, Piccadilly, declared to be duly appointed Seedsmen to the Society.

Glass Milk-pans.—Captain Stanley Carr, of Tüschenbeck, near Lübeck, transmitted to the Society, through Sir John W. Lubbock, Bart., and at the request of Mr. Handley, a specimen of the glass milk-pans employed so successfully in his German dairy, and referred to in his paper on the Rural Economy of Schleswig, Holstein, and Lauenburg, in the first volume of the Society's Journal (page 380). "The milk," says Captain Carr, "when brought to the dairy, is immediately strained through a horse-hair sieve into the vessels, whether of wood, earthenware, copper tinned, zinc, cast-iron (lined with a china-like composition), or *glass*, placed in rows on the floor. All these different kinds of utensils have been tried with various success, in the hope of discovering how, in hot weather, more especially when a thunder-storm is gathering, the milk can be guarded against a too early acidity; for, as it is a fixed and invariable rule that the cream must be removed from the milk before the latter gets at all sour, and an equally established fact, that all the oily particles cannot be obtained in a shorter period than 36 hours, vessels in which, during sultry, and especially damp weather, the milk could be kept the due time, are a great desideratum. As yet, however, there reigns much diversity of opinion on the subject, and shallow wooden vessels, as nearly as possible equally wide at top and bottom, containing, when full, about eight quarts, but in which, during summer, seldom more than six quarts are poured, are in most general use. They have, however, some disadvantages, of which the chief is the great difficulty and the consequent labour and close attention requisite to remove all acidity (which, in some states of the atmosphere, is almost unavoidable), and which, penetrating the pores of the wood, sometimes resists all the patient scrubbing; first, with hot water and small birch scrubbers, and secondly, with boiling water and a hard round brush made of pigs' bristles (with which every hair's breadth is carefully polished over), so that the despairing dairy-maid is compelled to resort to washing in a ley of wood-ashes, or boiling, or even scorching over lighted chips, followed by countless rinsings in pure spring water. To diminish, in some meaure, this labour, the plan of painting the milk-pails and dishes with a preparation of cinnabar, linseed-oil, and litharge, has been adopted by the milk venders in town, and in some country dairies: not only, however, is the expense considerable, as the vessels must be finished off with peculiar care, and require to get three coats of the composition at first, and one yearly afterwards, but the milk, for some days after they are brought into use, has a perceptible taste of paint. The tinned copper milk pans are very costly, and must be carefully watched lest they should require re-tinning. The zinc are, as yet, little known, and the assertion of their effect in better severing the cream from the milk not sufficiently proved. The cast-iron lined with enamel, though assuredly durable and very clean, seem too expensive; and the *glass* have many opponents on account of their brittleness, and the vague notions respecting glass and electricity inducing the idea that if the electric fluid get into the milk it cannot get out again! whereas, as it is ascertained that it always attaches itself to a conductor, and, in the absence of anything more attractive, runs along the surface, it is more likely that the milk should be protected in glass, which is a non-conductor, than in any other substance. In my dairy, which contains upwards of 180 cows, the glass vessels have been used for more than four years; and I give them a decided preference over all others. Their form is good, being sixteen inches broad at the top, and twelve at the bottom: the glass is dark bottle-green, transparent, and perfectly smooth, about one-eighth of an inch thick, and provided with a rounded rim at the upper edge, which makes it easy to retain a safe hold of them, even when full. They contain eight quarts, but never receive more than six. They cost 8d. a-piece, and their durability may be estimated by the fact, that to encourage carefulness, each dairy-maid is allowed one dollar per annum extra, as *pan-money*, being bound at the same time to pay 10d. for each one she breaks; yet hitherto, no girl has broken to the extent of her dollar. It is self-evident that acidity cannot be communicated to glass, and the ease and rapidity with which they are cleaned, requiring merely to be first washed with lukewarm water, then rinsed in cold water and placed in a rack to dry, effect such a saving in fuel and labour (diminishing the number of our dairymaids by at least two), that the less quantity of butter obtained, supposing (which I by no means concede) that the milk, during a few weeks in summer, does sour sooner, and consequently throws up less cream in glass than in wood, is more than compensated by the lessened expense of the establishment, not to mention the great advantage of attaining the indispensable cleanliness and purity of the vessels with more certainty, because at a less expenditure of time and trouble. Although it is an ascertained and undeniable fact that the quality of the butter depends much upon the nature of the pasture, the locality of the dairy, the universally prevailing cleanliness of the whole management, and *very* essentially on the purity of the water employed, still I ascribe much of the reputation which our butter has of late years enjoyed, (and which is verified by our obtaining at all seasons one penny per pound above the market price in our neighbourhood) to the beneficial introduction of glass milk-dishes."—At the suggestion of Mr. Hayter, M.P., it has been ascertained from Mr. Apsley Pellatt, of the Falcon Glass Works, Blackfriars, that in consequence of the heavy duty and restrictions of the Excise on manufactured glass articles in this country, glass milk-pans of a size and shape similar to those of Captain Carr, but of white flint glass and stronger mould, could not be made for sale in England for less than 7s. 6d. each; but should that price, under the restrictive circumstances of the case, obtain purchasers, there would be no difficulty in manufacturing a superior and serviceable article of the kind to any extent that might be required. The milk-pan presented by Captain Carr to the Society is of the common dark green bottle-glass, and weighs 6¼ lbs. It is round in shape, and nearly 4 inches deep, measuring 17 inches across the outside of the top, and 11 inches across that of the bottom.

Pollen of Wheat.—Mr. Groom (florist to the Queen), of Clapham Rise, Surrey, favoured the Society with the following communication:—"In reference to the effects I have observed from the use of bone sawdust, of which a sample was presented to the Council at its last meeting, I feel no hesitation in saying that I have experienced the most beneficial results from its use. I have now tried it two seasons, and think, if possible, it has answered better this season than the last. It has produced a most luxuriant growth, with a beautiful dark healthy green, and a robustness of habit in the plants equal to the summer growth; the plants also retain their lower leaves much longer, which is most essential with plants cultivated in pots. There is another point of importance, which is, that I do not think any injury will arise should the bone sawdust be used in what may be termed excess, as I have tried a very large quantity in the soil, without the plants appearing in any way affected, except in luxuriance of growth. There is also a most important result in an agricultural point of view, which I have no doubt will be found to take place from the free use of the bone saw-dust, and that is, the increased fertilizing power of the *pollen*, which will, in a great measure, do away with the light and defective ears in the grain crops, as I believe a good part of the failure arises from the want of vitality in the pollen." It is perhaps worthy of remark, that chemists have found in their analyses of the pollen of plants a predominance of those elementary principles of which bone is constituted; and that the purity of the bones employed as a manure, and the state of division into which they are reduced, has a considerable influence on the results obtained by their action, is strikingly exemplified in the following statement of Mr. Miles, M.P., in reference to his experiments on the growth of Swedes, in the Society's Journal, vol. 3, page 426:—A curious fact, however, came out in the application of different descriptions of bones used at the distance of 37 inches. In the one case the bones were procured as they came from the kennels, with the usual quantity of animal matter adhering to them, and crushed at home; in the other they were brought as refuse from a large button manufactory, after having been thoroughly cleansed for the purpose of manufacture. The respective proceed was:—

	Tons.	*Cwt.*
Turnips on bones crushed at home	11	8
Ditto on ditto from button manufactory	16	10

African Guano.—Mr. Forbes, of No. 2, Great St. Helen's, presented to the Society three specimens of guano, collected on different islands in the Bay of Angra Pequena, on the western coast of Africa. "We have as yet," says Mr. Forbes, "no arrivals of this guano into the port of London, but some cargoes are daily expected, when I shall take the liberty of submitting fresh samples." Mr. Miles stated that the African guano had reached Bristol; and having received from Mr. Greening, of Nelson Street, in that city, the analysis of it, made by Professor Herepath, he had the pleasure of then submitting it to the inspection of the Council. "I have analysed Mr. Greening's sample of African guano, and find that it is quite equal to that of Peru of good quality. The results are below; but I have not particularised those matters contained in it which agriculturists do not yet know the value of. All those which are known to be beneficial are:—

	Parts.
Phosphate of lime	21
Soluble phosphates, with a little common salt	8
The elements of ammonia	11
Other matters, almost entirely organic	60
	100

(Signed) WILLIAM HEREPATH.

A weekly Council was held at the Society's House in Hanover-square, on Wednesday, the 17th of April.

Prize Essays.—Mr. Pusey, M.P., Chairman of the Journal Committee, reported the adjudication of the Society's Prize of £50 for the best Report on the Agriculture of Wiltshire, to Mr. Edward Little, of Lower Sheldon Farm, near Chippenham, Wiltshire; and the adjudication of the Society's Prize of £50 for the best Report on the Agriculture of Norfolk, to Mr. R. N. Bacon, of Norwich:—these reports containing a statement of the ordinary course of cropping adopted in the different soils of each county respectively; the breeds of cattle, sheep, and pigs, most generally bred or fed within them; the state of their drainage; the implements used; the number of horses or other cattle employed in the different operations of husbandry; the tenure on which the farms are generally held; the wages of labour; the average amount of the poor's rate; and whether any and what alterations and improvements have been made in the system of agriculture pursued within the county of Wilts since the report made to the Board of Agriculture by Thomas Davis, and published in the year 1811; and within the County of Norfolk since the report made to the Board of Agriculture by Nathaniel Kent, published in 1796, and by Arthur Young in 1804.

Natural Manure.—Mr. W. R. Churchill, of Colliton, near Dorchester, Dorset, transmitted to the Council a specimen of soil, which, on exposure to the air, had become changed into a powerful manure for grass land, with the following account of its occurrence:—"I took the specimen now forwarded to the Council from a very high bank thrown up about six years since, in a strong, sour, kimmeridge clay soil, producing a coarse sedgy grass and English furze, not worth more than five shillings a-year rent. This bank was formed by a very deep ditch, used for a drain, as well as a protection to a hedge planted upon it. The substance in question appeared, at a distance, similar to white stone; and, on inquiry, I found had not existed in the bank when originally thrown up: there was a stratum of it about the middle of the bank in different stages of formation, extending more than four hundred yards. The bailiff, in removing a bank in similar soil, but of better quality, found a large quantity of this substance, and on putting it over some good meadow land, of a loamy soil on a clay bottom, he found it produce wonderful fertility, far superior to other manures. How this substance is formed is a mystery yet to be solved; at all events, it is not an original product of the soil, but is in a progressive state of formation. It is full of hairy filaments, with a cinereous, white, soapy marl. It does not effervesce in sulphuric acid, and is of a fatty nature; not tasting of saltpetre, although generated by exposure to the atmosphere. The great question would be to ascertain whether any artificial process would expedite its formation; for, if by throwing up heaps of this poor soil such a manure could be generated, the surrounding barren land might be greatly meliorated, and become worth cultivation: it is within three miles of Weymouth, far removed from the chalk formation."

Artificial Manures.—Mr. Miles, M.P., called the attention of the Council to the desirableness of including in the model experiment, proposed to be tried this year by various members of the Society, and which would be brought before the Council for final consideration and adjustment of detail at their next meeting, a comparative trial of the respective merits of the South American and African Guanos, applied in equal quantities to the land. An interesting discussion then took place on the facility with which artificial manures of every kind may be adulterated, the various modes in which this practice was systematically conducted in that metropolis and elsewhere, the importance of the strictest scrutiny into the quality of such manures, and, if possible, the application of some simple and efficient test by which the amount of adulteration in the sample of each of the different manures intended to be purchased may at once be estimated.

Swedish Turnips.—Mr. Alexander Ogilvie informed the Council that during the nineteen years he had lived as agent with the late P. L. Brooke, Esq., of Mere Hall, Cheshire, he had experienced very great and uniform success in the management of his turnip crops, a result which he attributed to the quality and amount of manure he had employed, and the early growth he had given to the plant by sowing the seed in immediate contact with it while in a state of active fermentation. One of his fields, from which in 1840 he had obtained no less an amount of Swedish turnips (cleared of tops and bottoms) than forty-three tons per statute acre, was a clayey loam with a retentive subsoil, effectually drained with tiles some years ago by cutting the drains not more than from five to six yards apart. In 1839 it was broken up from pasture for oats, the crop being good, and as soon as the oats were cut and removed from the field, he had the stubble skim ploughed from three to four inches deep; in that state he allowed the field to remain a month or five weeks, and then had it ploughed from 16 to 18 inches deep, with Smith's subsoil plough. After this operation, the field was not again disturbed until the spring of 1840, when he had it harrowed as soon as it was sufficiently dry. Between the end of March and the third week of May, he had it ploughed and harrowed three different times. From the subsoil ploughing in the autumn, the ground was very mellow in the spring, and after it was three different times ploughed and harrowed, the soil was very fine. The next operation was forming the drills, which were about thirty inches apart. While this was going on, he had the dung, in a moist state, carted out, and spread in the hollow between the drills, with some bone-dust sown over it and covered in *immediately* (to prevent evaporation) by having the drills split out over them. The quantity of dung per statute acre applied, was from 26 to 28 tons; and *over* this dung, he had sown with the hand about half a ton of the best raw bone-dust per statute acre. After the dung and bone-dust were covered in, from 2 to 3 inches of the surface by the splitting of the drills, he immediately, while the dung and ground were *moist*, had the seed sown by a machine, at the rate of 3 lbs. weight per statute acre, taking care that it was deposited *in the dung*; and thus, by being so deposited, it vegetated immediately, and grew out of the way of the fly in the course of eight or ten days. The moisture of the dung and soil and the heat occasioned by their admixture with the bone-dust, forced the plants for the first fortnight as favourably as if placed in a hot-bed. At the end of this period, the plants were almost ready for singling out, which, as soon as they would bear the operation, he had done with the hand-hoe from 14 to 16 inches apart. Mr. Ogilvie stated, that this was the method he had adopted in Cheshire, during a period of 18 years, and had never once missed a crop. He believed the lightest crop he ever had during the whole of that period exceeded 36 tons per statute acre. He never sowed later than the last week in May; and whenever weight of crop was wanted, he thought it absolutely necessary to sow during that month. The seed was obtained of Mr. Skirving, of Liverpool. The plants were twice horse-hoed, and once hand-hoed after singling. In the previous season all the crop was removed from the ground by the latter end of October; it was ploughed and sown with wheat during the first week in November: and it was in reference to this grain crop that the unusual amount of manure applied to the turnips was found, in the result of produce in both cases, to be both advantageous and economical.

Draining Level.—Mr. W. B. Webster, of Hounsdown, near Southampton, presented to the society one of his newly-invented levels for the purposes of of draining. This level is formed of an oaken, rectangular rod, turning upon an axis placed at the middle of its lower surface, and by means of a plate and screw secured firmly at a horizontal level, or any given inclination. On its upper surface, immediately above this centre of motion, is placed a small spirit-level; and at each end of the rod an upright plate of brass, containing the cross-wires. At the end nearest to the observer is placed an additional sight, moveable by means of a screw within a graduated groove, which indicates by the value of its divisions not only the line of horizontal level, but the rise and fall of distant objects above or below the place of observation. Mr. Webster claims for the instrument the advantages of cheapness, great simplicity, and its requiring no second person for its use; in addition to its capability of giving by inspection the rise and fall of land intended to be drained.

Horse Wheat-hoe.—Mr. John Bowers, of Westdean House, near Chichester, expressed his intention of exhibiting, at the ensuing Southampton Meeting in July, an instrument invented by the Rev. L. Vernon Harcourt, for hoeing the drilled wheat on his own farm, which had been found practically useful for that purpose; and Mr. Bowers had no doubt, from the experience he had himself had in the employment of the implement in question, that it would be found of great use, being very simple in its construction and different in principle from all implements hitherto invented for the purpose of hoeing.

Small Farmers.—Mr. Nicholls, as one of H. M. Poor-law Commissioners, having become extensively acquainted with the condition of the small farmers of Ireland, during his official connection with that part of the kingdom, and convinced of the great advantage they might derive from the cheap circulation among them of a compilation on farming topics adapted to their comprehension, requirements, and actual condition, undertook the task of preparing a work of that character, under the title of "The Farmers' Guide," which had passed through two large editions. The success of that publication, compiled with the view of imparting useful information to the small Irish farmer, and stimulating him to the adoption of improved methods of cultivating his land, had induced Mr. Nicholls to undertake, with the same disinterested motives, a work which might prove advantageous to the same class of farmers in England, exceeding in number, and he believed in extent of occupancy, the larger and more intelligent class of farmers, taking the country from end to end. In this compilation, Mr. Nicholls had endeavoured to form a compendium of all information essentially necessary in a practical sense to the parties for whom it was intended, excluding everything of a speculative or dissertational character, and recommending to their notice those points and details only which had stood the test of experience; having been careful to be as brief, simple, and clear as possible on every topic. As he had given the copyright of the work to Mr. Charles Knight, he had no further interest in its distribution than a desire that the small farmers, for whose use it was compiled, might be enabled to reap whatever benefit it might confer: and in order to render its publication as cheap as possible, Mr. Knight had included the work under the title of the Farmer in his series of Guides to Trade, Service, &c.: circumstances which he hoped would facilitate its circulation, and induce landed proprietors to purchase it for distribution among their tenantry, as had been done to some considerable extent in Ireland with Mr. Nicholls's previous publication. Mr. Nicholls concluded his communication by hoping, that as the efforts of the Royal Agricultural Society of England were unceasingly directed to the promotion of improvements in every shape, they would grant him the satisfaction of finding, that his little work, intended within its own sphere, to accomplish the same object, would not be considered altogether unworthy of their approbation.

A weekly Council was held at the Society's House in Hanover Square, on Wednesday, the 24th of April.

Eye Draining Tiles.—Mr. Wilson, of Stowlangtoft Hall, near Ixworth, Suffolk, presented a specimen of the tiles used for the "eyes" in under-drains, and made at Woolpit, in Suffolk; along with the two bottoms on which the tile is intended to rest. This tile is nearly a foot and a half long, and 6 inches high; having at one end the common shape in its transverse section of the capital letter U turned downwards, with a middle interior width of 2½ inches. From this wider end the tile, by lateral compression while in the raw unburnt state, had received a tapering diminution of its width to the other end, where the aperture being reduced to a vertical slit, six inches high by three-quarters of an inch wide, all rabbits, rats, and other animals too large to pass through the opening, would be kept out of the drains, and injury from their operations thus prevented.

Model Experiment.—Mr. Barclay, M.P., reported to the Council the progress made at the last meeting in arranging the plan of the Model Experiment proposed by Mr. Miles, for trial by such members of the Society as could conveniently join in it. An interesting discussion then ensued in reference to results obtained in the use of guano and farm-yard manure. Mr. Hillyard, of Thorpelands, near Northampton, would engage in no trial of new manures, unless they were susceptible of being brought into general farming use, and the experiments made after a white straw corn crop.—Mr. Gibbs thought that it was desirable to make the trial after a white grain crop, whenever the given weight of the turnips was the point to be ascertained.—Mr. Barclay, Mr. Hillyard, and the Rev. Thomas Cator, then agreed to undertake the trial of the model experiment proposed, and under such conditions as might hereafter be finally arranged.

A monthly Council was held at the Society's House in Hanover-square, on Wednesday, the 1st of May.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, presented to the Council the monthly report of the state of the funds of the Society; from which it appeared, that on the preceding day the current cash-balance in the hands of the bankers amounted to £1,422, independently of the sum of £1,000 remitted from Southampton, as a subscription, to meet the heavy estimated expenses to be incurred by the Society at its ensuing annual Country Meeting at that place in July; and that the stock invested in the public funds amounted to £7,700. The Chairman further reported a communication received from Mr. Colvile, M.P., announcing the final and satisfactory adjustment by the Local Committee of the only outstanding claim on account of the Derby Meeting.

American Seeds and Implements.—Mr. Colman, the American Agricultural Commissioner, presented to the Council a most interesting collection of seeds and implements from the United States.

A weekly Council was held at the Society's House in Hanover-square, on Wednesday, the 8th of May.

Turnip Fly.—Mr. Beards, agent to his Grace the Duke of Buckingham, communicated to the Council the result of his experience in the destruction of the turnip fly:—" I took an old sack, had it ripped open into the form it was when cut from the roll of canvas, had it nailed to a pole, the thickness of a pitching-fork handle, leaving the pole about eight inches at each end longer than the sacking. I then had one side smeared over with tar, made two men, one at each end of the pole, draw the sacking (the tarred side downwards) regularly over the field, letting it sweep the ground, carrying it at an angle of about forty-five degrees, fresh tarring it with a brush every 'bout,' or oftener if required; on examination, I found great numbers of flies sticking to the tarred sacking: I repeated the operation once a day, for four days, and saved the plant of turnips. Since that time, when I have discovered flies on the plants, I have pursued the same plan, and have not, from that time till this had occasion to plough up a single acre from the effects of the fly. I have several years past used gas-tar, in consequence of its leaving a stronger scent in passing over the plants than common tar, and which prevents the flies that are not caught from devouring the same. I do not mean to assert that once going over a field will prevent the destruction of a crop; it must be persevered in, according to the strength of the fly, and the state the land is in. To force the plant into rough leaf with good farming, and this preventive, I do believe if a farmer lose his plant of turnips by fly, it is in a great measure his own fault."—Mr. James Sherring, farm-bailiff to Mr. Henning, Frome House, Dorchester, Dorset, also favoured the Council with the following communication on the same subject:—"A month at least before I begin sowing my turnips, I purchase the different sorts of seeds I may require; I provide vessels for the reception of such, adding to every 20 lbs. of seed half-a-pint of linseed oil, taking care to have it well mixed; I add 1 lb. of the flour of sulphur. Every morning I have the whole rubbed between the hands, to get the seed in a proper state for drilling. The drillman must be apprised of what seed he has to use, or he will not drill a sufficient quantity, as the sulphur will choke the cups: this, of course, must be looked to."—Colonel Challoner informed the Council of the uniform success which had attended his management of the turnip crop, since the year 1830, by the adoption of the following simple process in the manipulation of the seed previously to sowing:—He procured double the quantity of seed required under ordinary circumstances for a single sowing; one half of this seed he steeped in diluted tank-water for 18 or 24 hours, and sowed it on the land in the usual way; in about a week afterwards he sowed the other half of the seed (which had undergone no preparation) over the same land. The result proved that, by this arrangement, a tendency to germinate one fortnight earlier was given to the turnip-seed, by being thus previously steeped, over the remainder sown in its dry state, and the consequence was, that a full crop of turnips was uniformly secured; for if the soaked seed came up in dry weather, it was devoured by the fly, which being thus apparently satiated with the first supply of green food, was found to leave the succeeding plants arising from the dry seed untouched; if, on the contrary, the soaked seed came up in wet weather, it remained the standing crop; as the fly, from the uncongeniality of the atmosphere for its development, had not then made its appearance, and, consequently, reserved its ravages for the plants of the second sowing.

Milk Pans and Syphons.—Mr. Apsley Pellatt, of the Falcon Glass Works, Blackfriars, presented to the Council an English specimen of glass milk-pans, made at his own manufactory, of the strength and dimensions of those sent over to this country, at Sir John Lubbock's suggestion, by Captain Stanley Carr, of Lübeck; but made of the ordinary transparent flint glass, instead of the dark-coloured bottle-glass which constituted the material of the German ones. He had already had half-a-dozen of them made for use in his own dairy, at Knowle Green, and would report on their merits and advantages in due time. With regard to the price at which they could be supplied under the present excise restrictions, he found that, allowing a very moderate profit, they might be made at 5s. 6d. each, or for 5s. each, provided the order extended to a dozen to be made at one time.—Mr. Henry Overman, of Weasenham, near Rougham, Norfolk, informed the Council, that he was not aware whether the use of milk trays made of lead was generally known among the dairy farmers of the country. In his own dairy of thirty cows, he used no other trays but leaden ones; and he had a model in preparation, which, if the Council would allow him, it would give him great pleasure to present to the Society.—Mr. Greaves, of Bakewell, Derbyshire, stated to the Council, that, having paid a visit, some twenty years ago, to the dairy of the late Duchess of Rutland, at Belvoir, he was much struck with the plan adopted for obtaining the cream without skimming it from the surface of the milk. The milk-room was lined with porcelain, laid on in squares; and, in order to preserve it cool and fresh, as well as to create a gradual ventilation, a fountain of cold water was kept constantly flowing in the middle of the dairy; the current rising through an upright pipe in the centre, and, having attained its height, rolling back in sheets of water over a cone of successive basins, increasing in size from the top to the bottom, where the water entered a drain, and was carried away. All the pancheons were of chinaware, and very shallow; it having, he believed, been satisfactorily ascertained, that the amount of cream thrown to the surface by a given quantity of milk was dependent, to a certain extent, on the breadth of surface given to it by such shallow vessels; the same measure of milk poured into a vessel allowing it to stand at two inches deep, casting nearly twice as much cream as it would do if its depth were eight inches. In the experimental part of the dairy, pancheons containing milk from various cows of the different breeds, were arranged in distinct order, and duly registered with every circumstance of condition supposed to affect the quality and quantity of the milk and cream obtained in each case; but the greater bulk of the milk was kept in leaden cisterns, about three feet long, two feet wide, and three inches deep; the bottom of each cistern inside having a slight concavity, in the centre of which was an aperture connected with a tap underneath, for the purpose of drawing off the milk, and leaving the cream behind untouched in the cistern. Mr. Greaves considered this to be on every account an admirable plan; and he had found in his own dairy, that a piece of saltpetre, about the size of a hazel-nut, dissolved in warm water, and mixed with every gallon of new milk as soon as strained, not only caused the milk to cast its cream better, but had the effect of removing from the butter every disagreeable flavour arising from the herbage of particular pastures; such small addition to the milk, of so well known and simple a saline substance, imparting to it a wholesome character, rather than otherwise, in a dietetic point of view.—Lord Camoys, of Stonor Park, Oxfordshire, stated that, while on a visit, last winter, with his friend Mr. Tollet, of Betley Hall, Staffordshire, it occurred to him, on inspecting that gentleman's dairy, without being aware of the contrivance then brought under the notice of the Council, that the milk might with great ease and nicety be drawn off from beneath the cream on its surface, by means of a syphon inserted into the milk over the edge of the pan. On his return home, he carried out the idea; and having found the plan to answer perfectly, he now used nothing else but the syphon for separating the milk from the cream. The syphons were made of block tin, with a tube of about a quarter of an inch bore, and cost two or three shillings each. His Lordship, at the request of the Council, expressed his willingness to present a specimen of the syphons to the Society.

Pipe Tiles.—Mr. Read, of the Regent's Circus, Piccadilly, addressed to the Council the following statement connected with the cylindric tiles of small bore, referred to in various portions of the Journal of the Society:—"In consequence of numerous applications from gentlemen respecting the efficiency of the small pipe-tile for surface-draining of clay lands, and whether the Tweeddale or horse-shoe tiles could be made by the new pipe-tile machine; in order to answer these questions satisfactorily to myself, in the beginning of March last I went through the counties of Surrey, Sussex, and the Weald of Kent, for the opinion of my old experienced draining companions, during the last 40 years. I have the satisfaction to find they have proved that the tiles of one-inch bore are sufficient, if properly laid, and a free passage for the water at the end of the drain. Nay, more; some of the most experienced practical men are of opinion that a still further reduction of the size of the tile may yet be made. It is well known, that the greater the declivity the more rapidly the water will pass off. But there is a great portion of land nearly or quite level—as, for instance, the valley of the Medway, in Kent (and in almost every county in the kingdom); this land is of a deep waxy loam, two or three feet deep, which, I have been told, cannot be drained; but I have found no difficulty in draining such land, where the channels could be kept open at the end of the ditches. If the drains were three feet deep, and two rods apart, there would be three feet fall from the surface to the bottom of each drain in one rod from the centre between them. In such situations the telescope tiles may be used with good effect; for instance, suppose a field 40 rods long, the upper end (or the 10 rods laid down with No. 4 tile, of smallest bore) can receive but one-fourth of the water that must pass through at the lower end (or the 10 rods of tiles of largest bore). The pipe-tiles made by Mr. Clayton's new machine may be all brought into use in the same field; they may also be placed in half the compass in the kiln and carriage, and burnt with half the expense of fuel, &c. These pipe-tiles are all made with separate dies, any size of which may be had, so as to give every person a choice of the size he prefers, for his own use." Mr. Woodward stated that with him the cylindric form of tile had not answered in Worcestershire, where he had drained 1000 acres up every furrow with tiles of that shape, and two or three inches bore; the drains becoming stopped up, as he supposed, from the loose dust being washed by storms down the fissures, where the ground had cracked, into the drains below, where a puddle accumulated which the force of the current was eventually insufficient to overcome. Mr. Slaney had employed the small-bore cylindric tile with signal success on his estate in Shropshire. His pipe-tiles varied from 2½ inches to 1½ inches in width, and had run quite clear after two or three years' use. He believed that a good deal depended upon the mode of filling in drains, and referred to the papers in the Society's Journal on that point. By allowing the clay to crack, and then filling in with a proper material permeable to the water, he conceived that the finest natural sieve was obtained to prevent future stoppage. His mode was to cut the drains three feet deep, and cover them over with the clay to the depth of about three inches; allowing each bed of clay to crack into fissures before proceeding further. When the clay had cracked he then filled in the drains as he had just stated. He had employed the draining-plough introduced by Mr. Law Hodges into the Weald of Kent with great success. Colonel Challoner thought green-sod turf formed the best material for filling in drains; it was not, however, always at hand. He hoped at some future time the subject of draining sandy soils, to which he had on a former occasion called the attention of the Council, would engage the serious consideration of the Society. He considered that part of the general question of draining to be the one, at the present time, the least understood, and to which practical attention had not yet been sufficiently drawn. We were well informed on every point connected with strong land draining, but knew nothing of the draining of sandy land.

Bones and Guano on Waste Land.—Sir Charles Lemon, Bart, M.P., called the attention of the Council to the following facts adduced by Mr. Karkeek, of Truro, in his Prize Essay read before the Cornwall Agricultural Association, connected with the results obtained from the use of bones and guano on the very poorest waste lands of that county. *Bone Dust.*—In 1835, Carwinick Farm was a barren waste, heath and furze being the only covering of the soil; let at 2s. per acre; north-west aspect, and clay-slate soil, of loamy character.—Experiment I. A common field was broken up, and the larger portion manured with bone-dust, at the rate of 3 quarters to the acre; the other portion being merely dressed with the ashes obtained from the breaking and burning of the land. The turnip crop was completely carried off by the fly. In the years 1836 and 1837 it was cropped with oats, and then laid down to permanent pasture. There was more than double the quantity of oats on that portion where the bones had been applied, and at the present time their effect can be plainly distinguished, as if a line of demarcation had been drawn between rich and scanty herbage, or between a green meadow and uncultivated land.—Experiment II. In 1836 another piece of the waste was broken, which was sown to oats, and on the following year a similar crop was taken. One portion of the field was manured with bone-dust only. The oats on this part were equal to those in the first experiment. After this, the whole was laid down to pasture; and at the present date, the line of distinction can be plainly seen where the bones were applied, at more than four miles distance. The same beneficial effect is also plainly seen in two larger patches broken up in 1837 and 1838. They have been sown with turnips, and manured with bone-dust only, which produced most excellent crops; after which a crop of oats was taken; it was then pastured up to the present time. In another piece, of about six acres, which was broken in 1839, and sown with Swede turnips, an excellent crop was produced; since which other crops have been taken, and the clover very luxuriant, the land being equal to that let at 40s. per acre. In 1840 another piece was broken, and sown to turnips, with bone-dust as before, and oats in the following year; both crops were excellent. In November, 1841, it was ploughed once only, and, without any other cultivation, sown to turnips in June, 1842. This crop was also good, and, in Mr. Karkeek's opinion, plainly proved, that turnips after grain may be produced without either spring or summer ploughing. In 1841 another large portion was broken, sown with Swedes, and afterwards cropped with oats, using the bone-manure only, which answered as well as before. From the year 1835 to the present time, Mr. Trethewy had thus successfully broken and cultivated patches of waste to the extent of 60 acres. His usual method of cropping had been—first turnips, then oats, seeds, and permanent pasture. In 1842, Mr. Karkeek witnessed a crop of Swedes on this improved waste land, which he considered as decidedly the finest crop of the kind grown in the parish that season. *Guano.*—Experiment I.—Tywarnhoyle Farm: aspect south-eastern, protected from the sea-winds; soil, argillaceous character, with deep retentive clay subsoil. Mr. Karkeek considered it almost impossible to find a more barren spot than this part of St. Agnes Common exhibited previously to its enclosure, there being scarcely turf enough left to make the hedges, and the greater part being chiefly subsoil. The following table exhibits the method of cropping and manuring, adopted by Messrs. Davey, of Redruth, in their first experiment:

A. R. P. 6 3 12 Statute.	When sown.	Manure per acre.	Produce per acre.	Second sowing.	Manure per acre.	Produce per acre.
Broken in 1839.	Wheat in autumn.	3 qrs. of bone. ¼ acre had 30 bushels of lime.	Fit only for pigs and fowls.	Oats in 1841.	Nitrate of soda 1 cwt.	36 bushels imperial of oats per acre.

Third sowing.	Manure per acre.	Produce per acre.	Seeds & manure.	Present appearance.
Barley in 1842.	Truro town-dung £9 ℘ per acre, including carriage, &c.	18 bushels.	Seeds. 2 cwt. of guano.	Very superior grass.

It will be seen from this experiment, that the soil was not sufficiently powerful to produce a crop of wheat, manured over with bone-dust, 3 qrs. to the acre. In the oat crop, the following year, manured with 1 cwt. of nitrate of soda, we have 36 bushels of oats, and no seeds;

in consequence of which the field was tilled to barley in 1842, and dressed with Truro (scavenger's) dung, at a cost of £9 per acre, including carriage. Here was another failure, the produce being only 18 imperial bushels per acre. The crop of seeds in the early part of the spring of 1843 made but little progress, in consequence of which it was dressed with 2 cwt. of guano per acre; and its growth shortly after this was surprising. So abundant was the grass during the summer, that it was a wonder to the neighbourhood how so much stock could have been kept for so great a length of time. Where the lime had been employed for wheat, the grass was by no means so thick as in other parts.—Experiment II.

A. R. P. 4 0 2 Statute.	First crop; when sown	Manures used per acre.	Produce per acre.	Second crop; when sown.	Manures used per acre.	Produce from guano per acre.	Produce from dung and comp.
Broken in 1840.	Wheat, in November.	Bone-dust, 3 qrs.	None.	Oats; in 1842.	2 cwt. of guano, 10 loads of compost, dung, earth, &c.	77 bush. of white oats.	29 bush. of black oats.

Seeds.	Manures.	Present appearance.
1843.	2 cwt. of guano.	Very superior.

In this second experiment it will be seen that the wheat failed, as in the first, evidently showing, in Mr. Karkeek's opinion, that wheat was not adapted to the new soil; whilst, in the following year, a beautiful illustration was afforded of the effect of guano on a crop of oats. Messrs. Davey had now, it appeared to him, learned by experience that the method of cropping and manuring which they commenced with was not such as would be likely to prove successful; and, accordingly, in the succeeding experiment they began cultivating the next piece of waste by taking a green crop first, following it by a crop of oats.—Experiment III.

First crop; when sown.	A. R. P. 4 1 0	Four separate acres, manured each with			
Turnips; in June.	Broken in 1841	Dung, 25 loads.	Sea-weed.	1 ton of horn, &c.	4 qrs. of bone-dust.
		Produce.			
		Pasture, 15 tons.	None.	None.	Swedes, 18 tons.

Second crop; when sown.	Manure per acre.	Produce per acre.	Seeds.	Present appearance.
Oats; in 1842.	2 cwt. of guano.	72 bushels of black oats.	1843. 15 loads farm-yard dung.	Very superior.

In this experiment, Mr. Karkeek considered the trial between bone-dust and the Truro dung as the first thing worthy of attention, the result showing a profit in favour of the bone-dust, and a loss of £5 15s. on the dung; the horn, &c. (being the sweepings of a button, &c., manufactory, consisting of filings of bone, horn, and ivory), and the sea-weed producing no effect whatever. The difference per acre in the expenses in this trial between bone and dung might be estimated as follows:—

Dung.	£	s.	Bones.	£	s.
25 loads of dung, at 5s.	6	5	4 qrs. of bones, at 23s.	4	12
Carriage of ditto, at 4s. per load	5	0	Carriage ditto	0	6
Spreading of ditto on land	0	10			
	£11	15		£4	18

Value of manure.	Produce.	Value per ton.	Value of produce.	Difference between value of crop and manure.	Profit and loss.
Dung, £11 15s.	15 tons pasture.	6s.	£4 10s.	£7 5s.	Loss.
Bone, £4 18s.	18 tons Swedes.	8s.	£7 4s.	£2 6s.	Profit.

Again, in the second crop, as much as 72 bushels of oats were produced by 2 cwt. of guano per acre. Where the horn and bone sweepings had been used previously for turnips, the oats and seeds were decidedly the better part of the field; bone next; dung next; and sea-weed the worst part of the piece. Where the horn had been employed, the land has at the present time a far better appearance than any fields in the neighbourhood. The three fields on which the previous experiments were made, kept 30 ewes, 30 lambs, 4 oxen, 3 horses, and 30 pigs, from the commencement of May until the harvest. The grass was cut and carried into the stable for the horses, the field having since that time been well stocked with sheep.—Experiment IV was made on a piece of waste, similar to and adjoining that on which the former experiments were tried.

Statute. A. R. P. 4 0 25	First crop sown.	Manure per acre.	Produce per acre.
Broken in 1842.	Swedes in July.	4 qrs. bone-dust and 1 cwt. guano.	20 tons Swedes.
Second crop sown.	**Manure per acre.**	**Produce per acre.**	**Seeds.**
Barley in 1843.	10 cwt. of hoofs of animals (£10 per ton at the farm), and 1 cwt. of guano.	12 imperial bushels only.	The clover and barley were early choked by the rye-grass.

The circumstance considered by Mr. Karkeek as most worthy of notice here, is the powerful effect produced by the hoofs of animals, in conjunction with guano, on the oats and rye-grass; the latter growing to such an astonishing degree, that it completely choked the clover, and very nearly the barley. The field has now the appearance of an old coarse pasture. The effect of guano and bone-dust mixed is also seen in an excellent crop of Swedes, 20 tons to the acre.—Experiment V.

Statute A. R. P. 3 2 37	First crop, sown 1842.	Manures per acre.	Produce per acre.
Broken from the common, 1842.	Turnips and Swedes sown late.	4 quarters bone—1 cwt. guano.	18 tons.
Second sowing, 1843.	**Manure per acre.**	**Produce per acre.**	**Present appearance.**
Oats.	2 cwt. guano.	60 bushels per acre.	Very superior.

In this experiment we have a similar effect produced by a mixture of bone and guano manures on Swedes; and in the following year another excellent crop of oats, with only 2 cwt. of guano per acre. The expenses incurred by Messrs. Davey in cultivating an acre of waste, were nearly paid by the two first crops, leaving the value of the straw—about 1½ ton per acre—to pay for incidental expenses. Mr. Karkeek estimated their expenses per acre in cultivating for the first crop at £11 17s. 6d., and for their second crop, £15 10s.; and the value of the produce on the two first crops only at £14 8s. The profit arising from the feeding of stock on the seeds is not considered in this account; but he thinks an idea may be formed of their luxuriancy, from the circumstance that, during the summer, Messrs. Davey received sevenpence per week for the keep of fat sheep belonging to butchers, and at Christmas last sixpence per week: the fields being now equal in appearance to others, let at 20s. per acre in the same neighbourhood; it having also been found that the expenses incurred in picking and carrying off the stones from the different enclosures were more than repaid, by the sale of the stones for the purpose of repairing the turnpike-roads.

A weekly Council was held at the Society's House in Hanover-square, on Wednesday, the 15th of May.

Pipe Drain Tiles.—Mr. Parkes produced some specimens of small cylindric pipes for drains, and desired to address a few remarks to the Council on the observances necessary to ensure complete success in their use. In all arts there were successful and unsuccessful operators, and failure was usually traceable to some neglect of necessary conditions or precautions, when the many succeeded and the few failed. In the isolated accounts he had heard or read of ill success with pipe tiles, he found that sufficient regard had not been paid to the proper form and dimensions of the excavation which was to receive them. It appeared, in these cases, that a perpendicular ditch (or nearly so) had been generally dug, many inches broad at bottom, to receive a pipe of small diameter; whereas, in Kent, and in the other counties which gave birth to this system, and where it had hitherto been most used, every one knew that the bottom of the drain should be formed of such size that the pipe may fit and fill it. The proper section of the trench was a wedge, being about fourteen inches broad at top, tapering down to the diameter of the pipe at bottom, whatever might be the depth. The bottom was cleared out by a scope drawn towards the workman, having the same diameter, or nearly so, as the external diameter of the pipe. The particular tools used for forming the trench had already been described in the Journal (vol. iv., p. 28). A series of pipes thus laid could not be disturbed, but there was nothing to ensure a true unbroken line of pipes, if they were laid in a trench of larger dimensions than themselves; and hence failure by stoppage would certainly arise. After diligent and extensive inquiry, he had not heard of a single pipe-drain failing, in any respect, in the districts where this system of drainage has established itself; nor could he see any valid reason to object to it. The use of inch-bore pipes was rapidly extending, and he believed it to be the best and cheapest practice known. He had been enabled to demonstrate, in the most satisfactory manner, that an inch-bore pipe far more than sufficed to receive and carry off the water of rain, according to the usual system of parallel drains: these experiments would appear in the forthcoming Journal. He would now advert to an occasional cause of failure incidental to drains in clay soils, which he conceived to be attributable chiefly to insufficiency of depth. Clay is a substance which may be said never to be at rest; it shrinks and swells according to its state of wetness or dryness; a mass of clay soil is, therefore, in continual movement. In addition, it was well known that clays can only be drained through the instrumentality of cracks produced by their drying. If a drain or conduit be placed too near the surface, and the cracks descend below it, such a line of drain would be liable to derangement, particularly in parts of unequal tenacity, from the contraction and expansion of the bottom or floor, arising from its varying state of wetness or dryness. It was well known to builders that the foundations of a house in clay should be laid at a depth greater than the reach of the cracks, or at least as deep as their usual penetration. The force of expansion in clay, and of subsidence from contraction, was well known to produce fissures and rents in buildings. It was enjoined in old treatises on building, and he found it to be the practice about London, to sink foundations in clay four feet below the surface, and to drain them below that level. He considered that agricultural drains two feet, or even two feet six inches deep, in clays, were subject to derangement, and even to stoppage, from this cause alone, and that their depth should not be less than three feet, or from that to four feet, where an outfall could be obtained. Deep drainage in all soils was also consistent with economy of outlay, as they may be placed further asunder, of which he had given several instances in Kentish practice, and now adduced others. He earnestly entreated the members of the society, who might be draining their farms, to reflect well on the advantages of deep over shallow drainage. Many persons had beneficially drained lands over again to a greater depth, which had been substantially drained two feet, and even two feet six inches deep, 30 to 40 years since. As regards continuous good action, he believed that deep drains would be much more durable than shallow ones, as they were removed below disturbance from the pressure of horses, carts, or implements. Also that deep drains were less liable to choke than shallow ones, as the water reached them better filtrated. He was of opinion that the sharp wedge-shaped form of the sides of the trench in which pipe-drains were laid, was eminently conducive to their durability, as the little pipe at the bottom was thereby protected from undue superincumbent pressure. The water entered such drains at the level of the floor in a thoroughly filtered state, and the velocity of the current kept the line of pipes at all times clean; nor could any vermin enter them. He had heard of, or read, a statement that the floors of drains in clay soil became so soft that tiles sunk in them, or that the bottom stuff was protruded upwards and choked them. It was likely this might occur when tiles were used without soles. It did not happen with pipe-drains. The opinion, indeed, prevails in Kent, that the floors of pipe-drains are drier and firmer than other parts of the field at the same depth. He had no doubt of the truth of this opinion, and it was confirmed by experiment, as well as observation. It appeared that, if a pipe of 1 inch bore, 12 inches long, and ¼ inch thick, were hermetically closed at each end, and placed in water just covering it, it would become full of water by absorption in about five hours; and if hung up horizontally, it would let all the water pass out of it in about the same time. This experiment was first communicated to Mr. Parkes by Mr. Putland, of Saylherst, Sussex; and he had repeated it with nearly similar results. This fact, which is in strict accordance with the known porosity of unglazed earthenware, showed, that after the free water of rain had permeated a soil, and passed off through a drain, the pipes would still continue to act as absorbers of moisture, to some extent, from the earth in immediate contact with them; by which means, and in consequence of the indraught of air through the drain, it was reasonable to conclude that the earth adjacent to the pipes would become somewhat drier and harder after a cessation of rain than the more distant parts. This was an additional reason with him for the preference he had always given to tiles rather than to broken stones, or any other material which filled a drain, as a free circulation of air was thereby better established; and it must be recollected that a drain served the double purpose of a conduit of water out of the soil and of air into it, the latter function being, perhaps, quite as important as the former. In answer to inquiries from several members respecting the adaptation of small pipes to the drainage of soft soils and sands, Mr. Parkes showed, that by inserting a small pipe into a larger one (nearly fitting) for about a third of its length, or four inches, a perfect continuity, or chain of pipe, would be formed, which could never sink. It was well known that some of the most plastic and pure clays were troubled with what he might term faults—*i. e.*, sand-beds occurred. He knew of such at Mr. Handley's, and other places, and in them the ordinary tile-stones, wood, &c., would sink, and the drain was thus marred. He would apply this arrangement of pipes as a perfect remedy in such spots, and even in much more unsound and troublesome bottoms; but it was clearly impossible to prescribe the exact mode of proceeding in every difficulty, as the particular case must be inspected in order to know how to deal with it in the best manner.

The General Meeting of the Society, for the purpose of electing the President, Trustees, Vice-Presidents, and twenty-five general Members of Council, for the year ensuing, and of receiving the report of the Council for the past half-year, was held, agreeably with the terms of the Charter, and the due notice required by the Bye-laws, at the Society's House, in Hanover-square, on Wednesday, the 22nd of May,—the Right Hon. Earl Spencer, President, in the chair.

The members having delivered in their several voting lists, signed by themselves respectively, for the election of the Council, the President proceeded to nominate Mr. Dean, Mr. Druce, and Mr. Shaw, to be the scrutineers of the ballot; when those gentlemen retired with the lists into an adjoining committee-room for the purpose of making the requisite examination. The Hon. Captain Spencer then rose to propose his Grace the Duke of Richmond as the new President for the ensuing year. He was quite sure, in submitting that proposition to the adoption of the meeting, that it was unnecessary for him to endeavour to pass any encomium on the high character of the Noble Duke; his name would be associated with the Society as long as it endured; he was one of the original promoters and founders of the Society, and on all occasions had been found amongst the most zealous and active of its members. Mr. Blanshard, in seconding the motion, referred to the steady interest at all times evinced by the Duke of Richmond for the welfare of the Society, and the great advantages which had always resulted from his cordial co-operation in carrying out the details connected with every branch of its business and proceedings.

The motion was then put, and carried unanimously.

The Duke of Richmond immediately rose to return thanks for the honour the Society had done him in again electing him their President. He assured the members that the new election they had then unanimously made in his favour gave him the highest satisfaction, inasmuch as it furnished to him a gratifying proof that his exertions in the cause of the Society, during his former presidency, had met with their approval. The Society had already conferred the greatest benefits on the country at large; and in supporting its interests, and those of the agricultural community in general, it would be his great object to prove his gratitude, not merely by words, but also by deeds.

On the motion of Mr. Pym, seconded by Sir John Johnstone, the following Trustees were unanimously re-elected:—

Sir Thomas D. Acland, Bart., M.P.; Hon. R. H. Clive, M.P.; Marquis of Downshire; Duke of Grafton; Right Hon. Sir James Graham, Bart., M.P.; Henry Handley, Esq.; Sir Francis Lawley, Bart.; Joseph Neeld, Esq., M.P.; Duke of Richmond; Duke of Rutland; Earl Spencer; Duke of Sutherland.

On the motion of Mr. Raymond Barker, seconded by Mr. Kinder, the following vice-presidents were unanimously re-elected:—

Duke of Buckingham; Earl of Chichester; Earl of Ducie; Marquis of Exeter; Earl Fitzwilliam; Sir Thomas Gooch, Bart.; Sir Charles Morgan, Bart.; Duke of Northumberland; Lord Portman; Earl Talbot; Duke of Wellington; Lord Worsley, M.P.

Mr. Shaw then reported the following result of the scrutiny of the ballot-lists. He had the satisfaction of stating that the election was perfectly unanimous, not a single vote having been recorded against the house-list as recommended to the General Meeting by the Council.

I. Members of Council not going out this year by rotation:—

Colonel Austen; Hon. W. B. Baring, M.P.; John Benett, M.P.; Samuel Benett, Esq.; T. W. Bramston, Esq., M.P.; E. Buller, Esq., M.P.; Colonel Challoner; J. W. Childers, Esq., M.P.; Edward Fellowes, Esq., M.P.; Humphrey Gibbs, Esq.; Lord Hatherton; John Hudson, Esq.; W. H. Hyett, Esq.; Sir John V. B. Johnstone, Bart, M.P.; Fielder King, Esq.; W. Miles, Esq., M.P.; E. W. W. Pendarves, Esq, M.P.; Sir R. Price, Bart.; Phillip Pusey, Esq., M.P.; Francis Pym, Esq.; E. A. Sandford, Esq.; J. V. Shelley, Esq.; T. H. S. Sotheron, Esq., M.P.; W. R. C. Stansfield, Esq., MP.; Henry Wilson.

II. Members of Council re-elected:—

David Barclay, Esq., M.P.; T. Raymond Barker, Esq.; F. Burke, Esq.; H. Blanshard, Esq.; John Ellman, Esq.; S. Grantham, Esq.; W. G. Hayter, Esq., M.P.; C. Hillyard, Esq.; W. Fisher Hobbs, Esq.; Sir Hungerford Hoskyns, Bart; S. Jonas, Esq.; G. Kimberley, Esq.; John Kinder, Esq.; Sir Charles Lemon, Bart., M.P.; Professor Sewell; William Shaw, Esq.; Hon. Captain Spencer; C. Stokes, Esq.; H. S. Thompson, Esq.; Geo. Wilbraham, Esq.; M.P.

III. New Members of Council:—

W. R. Browne, Esq. (Wilts and Middlesex); Edward Gough, Esq. (Salop); Viscount Hill, (Salop); J. Allen Ransome, Esq. (Suffolk); R. A. Slaney, Esq. (Salop).

The Council, in laying before the members, at their present general meeting, their half-yearly report on the state and prospects of the society, at the completion of the sixth year from the date of its foundation, have the satisfaction of recording the progressive fulfilment of its various objects. The excitement which attended its original formation, and the rapidity with which the importance of those objects was recognized by the friends of agriculture in every part of the kingdom, at once swelled the list of its members to an extent unprecedented in the history of any similar institution. That excitement having roused the attention of the cultivators of the soil, to the fact of the great resources within their own immediate power, has led them to seek with practical caution, but with an energy also proportionate to the advantages to be gained, those means by which the objects in view have appeared to them most likely to be attained and rendered applicable to their local circumstances. Not only have the leading agriculturists of the kingdom come forward to aid the Council in carrying out, to the best of their power, the general collection and discussion of facts having an important bearing on the various branches of agricultural improvement, both personally at their meetings and as contributors through the pages of the Journal, but within their own local sphere in the country they have, in many instances, been instrumental in reviving the spirit of existing associations, or of establishing new societies or clubs of practical farmers for the observation, collection, and discussion of such practical results as more immediately refer in the first instance to the improvement of their own local agriculture, but become afterwards generally applicable to other localities, placed under the same circumstances of aspect, soil, and cultivation. It has been the uniform desire of the Council to avail themselves of every opportunity by which the operations of the society may extend their influence, and convey sound and practical information, through the numerous classes of its members distributed over the various districts of the kingdom. While preserving its fixed locality for the transaction of official business in the metropolis as a centre, the Council have the satisfaction of referring, with great confidence, to the signal success which has attended the means of communication afforded by the distribution of the Journal, the circulation of cottage tracts reprinted from its pages, and the change from year to year of the locality in which the country meetings are held. In the more concentrated sphere of its legislative and official duties, the Council have to report the active measures taken by their various committees to simplify the details connected with their respective departments, and to avail themselves of such results of experience as render the general transaction of business gradually more uniform, exact, and satisfactory. The society consists of the following members, namely :—

Life Governors	95
Annual ditto	214
Life Members	442
Annual ditto	6161
Honorary ditto	15

making a total of 6927 members on the books of the Society at the present time, and the Council have the satisfaction of reporting the steady accession of candidates from every part of the kingdom, at each of their weekly meetings; no less than 274 new members having been elected during the last three months and a-half. Since the last General Meeting in December, the Council, at the recommendation of the Finance Committee, have ordered the names of 249 Members to be removed from the list of the Society; of these, 31 were lost to the Society by death, and 157 struck out, either at their own request, on account chiefly of their having entered the Society at the Country Meetings, for temporary purposes only; or on the decision of the Committee, who have maturely taken each case of exemption, claimed under a variety of circumstances, into their special consideration: while the remaining 61 have withdrawn their names from the Society, for reasons assigned by them at variance with the fundamental rules of the charter.

Balance-sheet of the Accounts from the 1*st of July to the* 31*st Dec.,* 1843, *as examined and approved by the Auditors:—*

RECEIPTS.	£	s.	d.
Balance in the hands of the Bankers, June 30, 1843	1509	19	10
Ditto ditto Secretary, ditto	1	6	4
Half-year's Dividends on Stock	130	16	6
Life-Compositions of Governors	90	0	0
Ditto Members	217	0	0
Annual Subscriptions of Governors	183	0	0
Ditto Members	1124	3	0
Balance on Sale of Journal, after deducting the charge for stitching 16,000 Copies, and for amount of Advertisements	83	14	1
Sale of Cottage Tracts	9	6	6
Receipts during the half-year, on account of the Country Meetings	896	14	3
	£4246	0	6

PAYMENTS.	£	s.	d.
Permanent Charges	260	12	6
Taxes and Rates	17	1	5
Establishment Charges	408	3	9
Postage and Carriage	12	12	10
Advertisements	13	10	0
Expenses of Printing and distributing the Journal	644	16	3
Prizes	1271	0	0
Miscellaneous Payments	24	5	11
Payments during the half-year, on account of the Country Meetings	922	4	1
Balance in the hands of the Bankers, December 31, 1843	657	11	8
Balance in the hands of the Secretary, December 31, 1843	14	2	1
	£4246	0	6

(Signed) C. H. TURNER, CHARLES TAWNEY, } Auditors on the part of the Society.

THOS. RAYMOND BARKER, Chairman of the Finance Committee.

C. B. CHALLONER, HENRY BLANSHARD, } Members of Ditto.

The President requested the Chairman to favour the members with an account of the present state of the Funds of the Society, and an estimate of the probable income and liabilities for the next three months; when Mr. Barker laid before the meeting the following statement accordingly: The funded property amounted at that time to £7,700; and the current cash-balance, at the disposal of the Society, to £2039. The income for the next three months, was estimated at £1613; the ordinary expenses during that period, at £397; the prizes to be awarded at Southampton, at £1400; and the excess of expenditure over receipts on that occasion, at £1000; so that if a balance were struck three months hence, the Society would hold its invested capital untouched, with a probable current cash-balance of £855 in the banker's hands. There was, however, a large bill on account of the printing of the past year's Journals, in progress through the Journal Committee, which would, in due course, come under the consideration of the Finance Committee; but whether the whole or any portion of that account would be ordered for payment during the next three months was uncertain. The rate of income was the greatest during the spring, and that of expenditure the greatest during the period of the Country Meetings; so that the income for the next three months proceeded under average and ordinary circumstances; while the expenditure with what it was compared took place under temporary and extraordinary circumstances. It was, therefore, the more gratifying to the Finance Committee to find the funds of the Society so well able to bear the severe test of such comparison.

ON REPORTING EXPERIMENTS IN FARMING.

It has often been remarked, that in reporting results of experiments on the farm, the experimenters have not always shown that degree of accuracy that was necessary to arrive at a just conclusion. This is much to be regretted, because, as the experiment must have been instituted to clear up certain doubtful points, if it be not properly noticed and reported, 'tis worse than having never tried it. The readers of agricultural publications must often have seen the evil of this course, and perhaps it never was more obvious than in the proceedings at the last Penwith meeting at Penzance, Cornwall, to part of which I beg to call attention:—

" *Guano.*—D. P. Le Grice, Esq., related the result of some experiments with guano and other manure. He tried guano on turnips, at the rate of 5 cwt. an acre; and the produce he had was 76 tons of turnips per acre, or 64 tons when the tops and spindles were taken off. (This statement was received with marks of surprise, which did not appear to subside during the afternoon.) On the same field he tried other manure, at the rate of 30 loads per acre, composed of 15 loads stable dung and 15 loads Penzance town dung. The produce was about equal, so that he could not say the result was in favour of guano, except that guano was cheaper than the manure from Penzance. He used wood ashes with guano in order to increase the quantity. He also used wood ashes with some part of the stable and Penzance dung, and it was curious that where he used the wood ashes there were not so many turnips decayed when he came to take them up, as on the portion where he did not use the wood ashes.

"Several members expressed their surprize at the statement of Mr. Le Grice, and said that 37 tons per acre was considered an extraordinary crop. Mr. Le Grice, however, adhered to his statement; but it was the general opinion that some mistake had been made in the weighing."

That there was a mistake must be evident to all; and positive as Mr. Le Grice then was, he, too, is doubtless convinced of it by this time.

Yours, truly,

Rusticus.

June 15, 1844.

UNJUSTIFIABLE ATTACK ON THE GUANO MERCHANTS OF LIVERPOOL.

Sir,

On lately reading over the proceedings of the Royal Agricultural Society, I was particularly struck by a charge preferred against the guano merchants of Liverpool, by an obscure individual of that town. He stated to the Society that above twice the weight of imported guano had been sold in Liverpool; in short that every ton of guano had been adulterated with a ton of rubbish, and the whole sold as genuine guano!

Now, Sir, I have been in the habit of purchasing guano in Liverpool ever since it came into note as a manure, dealing with and relying on the respectable importers in every case, and in no single instance have I been duped. Indeed I don't know how deception can be practised; because, the purchaser can see the analysis of any cargo that he may wish to purchase from, and he may either have it direct from the vessel, or from the queen's bonded stores.

I therefore consider, that the author of the slanderous attack ought to be compelled to deny what he has stated,—for I am positive he cannot prove his assertions. If disreputable attacks are to be made on respectable men whenever it may suit the party to do so, what individual is safe from them; and what confidence can the purchaser have in any one with whom he chooses to deal?—Yours, &c.,

A Purchaser of Guano.

June 20, 1844.

AGRICULTURAL TOUR IN IRELAND.

By **JOSEPHUS LILLEY**, West Derby, near Liverpool.

I was much struck by your correspondent's account of the low price of land in West Britain (Ireland), as styled and stated in your Magazine, and having taken a trip to the district in question, I conceive it will come within your province to insert the following information for farmers and their sons. If they take the same route which I did, it will be a very cheap tour; and it may perhaps deter many from going to America, away from their friends, and being ruined for ever.

They can leave Liverpool at seven o'clock in the morning or evening, and take passage by the fine steamers of the City of Dublin Co., from

	Fare on Deck each side.	*Fare in best part.*	*Distance.* Miles.
Liverpool to Dublin for	2/6	10/6	140
Dublin to Limerick (steam) down that noble river the Shannon	7/6	15/0	258
Limerick to Tarbert	1/3	2/6	44
Tarbert to Listowel and Tralee	0/6	0/6	45
Tralee to Killarney	0/6	0/6	23
Killarney to Newmarket	1/0	1/0	38
Newmarket to Cork	7/0	7/0	130
Cork to Bristol or Liverpool	5/0	15/0	268
	£1 5/3	£2 12/	946

They can thus travel fully 1000 miles for £1 5s. 6d. Almost any agricultural labourer can do this; and English farm-servants are sure to meet with excellent work and constant employment in any part of Ireland. They need be under no fear of jealousy on the part of the Irish labourers, as they are too ignorant of the principles of modern agriculture, and too kind to strangers for them not to be encouraged, in order that they may benefit their country and themselves.

They will see in many districts, here and there, fair and good cultivation, but it is very rare; and the land being so cheap as to be taken in large tracts of either 20 to 50, or 500 to 1000 acres, an English farmer or labourer with capital is sure to do well.

I went to Cork, and came back by way of Tipperary, through the estate of the Earl of Derby, which is a pattern for all Ireland, and indeed England too. Lord Stanley visits it every year. The whole of Tipperary, even to the public roads, is fairly worked, well stocked with timber, is a capital grazing county, and many of the hills are well cultivated. A poor grazier, not 25 years back, (a Mr. J— B——,) has now 15,000 acres, and his sons are at the bar, in the magistracy, and two of them are in parliament; but I do not consider Tipperary so well cultivated as the county of Clare,—40 miles to the sea coast of the broad Atlantic!—here the English farmer, the gentleman tourist, and the philanthropist would be astonished.

I travelled with my two boys, ten and twelve years of age, and a young barrister from Dublin, a Mr. ———, and crossed the Shannon at the ferry of Ballylongford, (three miles from Tarbert,) from whence a steamer goes daily to Kilrush, on the Clare side. This is a thriving place; large vessels are built here; salmon, cod, and other fishing boats, go to London, Liverpool, &c., &c.

From Kilrush we went to the beautiful Bay of Kilkee, surrounded with cottages, upwards of 1,000 in number, for the use of sea-bathers. The accommodations are very good. A traveller would be astonished at the cheap fare here, and the numerous sea-bathing ports and harbours on the West Coast of Ireland;—truly may it be called West Britain. The entire cottage, of two or three rooms, can be had for 3s. to 5s. per week; and this includes fire, water, potatoes, milk, and a servant to cook your victuals and wait upon you, without supplying her with food. Such cottages the tradesmen of Dublin, Limerick, and Cork take; but there are better cottages for the nobility and gentry, elegantly furnished, from 10s. to £10 10s. per week, according to quality.

Kilkee is only eight miles from Kilrush. From thence we hired a car to view the Puffin Holes at Hoop Head, 43 miles, for 12s. 6d., and called to view various farms. Castles well built, and some in ruins, are everywhere to be seen. Returning in the evening to Kilkee, we slept there two nights, and engaged the same car to take us to the Cliffs of Moher, and back to Kilrush, a distance of 110 miles, for 15s.

We were much pleased with our visit to the snug little town of Kilkee, where we enjoyed the celebrated Spa waters (Sea-tang), warm baths of salt water;—it was like bathing in oil. Being an invalid, I cannot describe the peculiar, agreeably delightful, reviving and refreshing enjoyment, I received from taking the Sea-tang warm bath.—I leave a book at your office, (the Liverpool Farmers' Library,) for the inspection of any gentleman, farmer, or invalid, who may wish to have some account of these Spas and bathing houses; and it is well worth the study of the medical practitioner, more especially of those who are studying the hydropathic system, so much practised in Limerick, Germany, and at the Westmoreland Lakes.

At ten o'clock the next morning, we started from Kilkee, and passed through a well-cultivated district, 16 miles, to La Hinch. Green crops, mangel wurzel, &c., are grown here in abundance. Cabbages are carted to Limerick and Kilrush, and sold at 3d. and 4d. each, to the foreign shipping, in scarce times; but now (in September last) they are 1d. and 2d. each. There are thousands of cottages along the coast, and up the slopes of the hills, ten miles inland; we could see them ten, thirty, and forty miles, in different directions, as we ascended and descended the slopes: they are all covered with lough slates, 10 to 12 feet long. At some of the hotels in these bathing towns, open to the sea (the Atlantic), there are 50, 60, 80, and 100 beds, and accommodations for 100 or 200 horses. Not a thatched cottage can be seen. They are all whitewashed annually, by their excellent resident landlords, Cornelius O'Brian, Esq., and Major Macnamara, both Members of Parliament for the county of Clare. The ivy, honey-suckle, sweet-briar, and flowers, are growing in the windows of the cottages. Indeed the farm buildings, in many places, are good on these estates. Their little gardens are in good order,—potato plats, fruit trees in full bearing, with thyme, mint, and vegetables of all sorts.

I travelled from 3,000 to 4,000 miles in Ireland last year, and know well that Englishmen of all classes, especially farm labourers, would be well received, and the latter would soon get constant work, at high wages. The gentry and farmers wish to know how to raise grasses of various sorts, especially Italian rye grasses, and the later sorts, so that they may have the green sward nearly throughout the year, and green crops for their cattle winter and summer. They know nothing of the properties of manures, or the peculiarities of the soils; and generally the cottages are poor, especially in the upper part of Cork, and Kerry; Limerick is a little better, but nothing equal to the county of Clare.

The landlords must first begin to build cottages for their labourers, to make them a shelter from the winter; next, farm-buildings for their cattle, and store-houses for their produce. There may be said literally to be no barns for their produce; most of the little working farmers thrashing their corn in the fields, and in the open air, at their cottage doors. Their old and young cattle are out in their (so-called) pastures winter and summer. The great proprietors should not allow their tenants to be without houses for their cattle. If that enlightened and celebrated gentleman, traveller, and landlord, Captain Barclay, of Uley, near Aberdeen, had travelled in Ireland, and written a tenth part about the system practised in Ireland as he has done respecting American agriculture, there would have been half a million of money or more expended in out-buildings in the sister isle, the lives of probably 100,000 head of cattle saved to the nation, and his fellow-countrymen and neighbours would have been emigrating to West Britain instead of the western coast of America, and its wild forests.

Should this meet the eye of any non-resident Irish (West British) landlord, I assure him, however unpopular he may be, that his sins will be forgiven and his life safe and spared, if he will go and reside amongst his tenantry, erect them farm-buildings, cottages for their labourers, and on no account leave it to any agent (though he may assist him), but see it done himself; if only a flying visit for one or two weeks, or a month in a year. His rents will soon be paid up in full, and often in anticipation, as they (the working farmers) would be glad to have a pattern shown them by their own landlord,—not an agent who never walks over their lands, but keeps himself to his own garden and fields, realising a fortune at the absentee's expense. Their tenants would get a better price for their cattle, as they could get them fattened off by having proper places (houses and sheds), as in Belgium.

Lord and Lady Kenmare, the Marquis of Waterford, Miss Osborne, the Marquis of Downshire, and numerous others, do their duty on their estates, and numerous neighbours follow their steps; but this is nothing,—a drop in the ocean only. What can they be to 10,000,000 of people? 99 in 100 of whom subsist on nothing but potatoes (no salt even).

By having houses for their cattle, they would get more manure from the various stock—horses, cows (young and old), pigs, sheep, goats, fowls, turkeys, ducks, &c., &c.; and their hay, straw, corn, and other produce would be entirely or half lost in bad seasons. Nay, more, they would, with "proper farm buildings," have 999 more chances of paying their rents better, and generally in full. They would try to live (but now they are starving) "under their own vine and under their own fig tree," in peace, comfort, and content, with their large families around them, presenting a cheering picture to the landlord, instead of being looked upon as a drain upon the gaol. They would then require no act of parliament to compel them to emigrate to foreign lands; as there is plenty for ten times the population, and to spare. A resident gentry improve their tenantry and tenants' children beyond the third and fourth generation: it goes down to their posterity for ages. Not only so; but their neighbouring proprietors are emulated thereby.

I saw manure in the county of Clare collected early, on small and large farms; but in the higher part of Cork, Kerry, and Limerick none, which much surprised me.

A correspondent in your last number says he begins to make manure in April and May, and indeed is collecting it all the year round, every day in the year, wet and dry weather. This I did myself 30 years back, close to the Marquis of Westminster's, near Wrexham and Chester. The manure is turned over often, mellows all the summer, ferments, and forms saltpetre*, ammonia, and other chemical compounds.

I remarked the want of manure in Kerry very much. I did not see a heap in the entire county during my stay of three months, and was in many of the farm-yards. I spoke of it to several persons, and to one party from Northumberland, who has the management of the largest farm in the county of Kerry—400 acres; the remark was, "He made all his manure in the winter, when the cattle were housed." To make them think of it more, and stimulate them to look after and collect all the manure possible, I suggested the ditches to be cleaned (inside and out) in July, August, and September: many were full of mud, hay and straw, dust from the roads, very like guano, of a foxy-red cast; but it would not do, there was a perpetual excuse—they had just cleaned them (meaning at Christmas previously); another reason was, that they never cleaned them but once a year; another reason, it was not their business, though the ditches belonged to them, it was the business of the contractor of the roads, who scraped it all to the road-side once a year, and then they took it into the fields.

This *excellent* Northumberland manager could not do it twice or thrice a year, though I suggested it. He said he did not like ditch manure; it was bad; it made the land sour;—this was another excuse. Being unwell I did not argue any thing, but I thought it would sween if left in a heap long enough, and mixed with farm-yard manure. His under manager could have done the ditches—all the farm servants having plenty of time, but they preferred being idle, though they get full wages for being idle, too,—it being the custom of the country to be idle, as Englishmen say, for private reasons, either their wages are not paid up for fear they run off and get better wages after this manager had taught them his system of modern farming, or for fear they would not be employed in the harvest and in the winter, if they did too much work, or from some other cause; no one can tell, without a long residence, their systems, or motives, or excuses, but all is "Never fear, sir!—Never fear!!—Never fear!!!—Sure, never fear!!!!—Sir—your honour! one will do anything you wish, if ordered, sure, if ordered, sir!!!"

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* During the late French war, when they could not get saltpetre from Peru, India, or the Levant, the farmers all aver that France made saltpetre in their manure heaps, as described in the Royal English Agricultural Society's Journal.

The roads were strewed with hay in every direction, and the wind carried it off the carts for miles, as they were carting it to the few farm-yards visible. It generally stands by a *mud cottage*. The roads were even worse strewed with hay about this new trial-farm of 400 acres,—arising from their using hay-bands, instead of ropes, to tie it on the carts; and every other load fell off the carts in the lanes, either from bad loading, or hay-ropes badly made. Most of the hay was cut and made at the end of April and in May, yet it *all* lay in the fields until September, when the winds blew away ten or fifteen per cent. of it. There were fully 150 tons made on this farm,—so that upwards of 20 tons, of £100 value for feeding stock, were blown to the four winds, for want of care and good management. The reason assigned for allowing the hay to remain so long in cock in the different fields was, that it might sweat, and get *well* made, to run no risk of heating in the stacks.

This large value of hay wasted in the public roads, would have made excellent manure. It would have paid the owner of this farm to have kept two men the year round, collecting manure—clearing the ditches four or six times a-year, after each flood from the hills—sweeping the roads (which the contractors would be obliged to them for doing)—gathering together the brushwood, leaves, old thorn hedges and weeds, to burn; whilst every bit of wood, thorn, shavings from the joiner's yard, sawdust, old rags, bones (which should be crushed), indeed every thing thrown away, goes to the pigs and manure heap,—which should be, and is, *gold* to the farmer. The manure man is the best man on the farm, and brings more money into his master's pocket, even than the head farmer, or agent himself, (as stated in your last Magazine,

p. 7;)—indeed the latter generally takes money *out*, instead of putting it *in* his master's pocket.

Again: They have no idea in Kerry—or indeed anywhere, scarcely—that "all manure, of whatever kind, will become liquid, and eventually gaseous; it must be so before it can become food for plants (of any growing crops), and the nearer that state it is, the sooner it will accomplish its ultimate purpose. But the manure, in decomposing, is not reduced to its elements in the process; new compounds are formed; the oxygen and carbon form carbonic acid, another portion of oxygen and hydrogen form water, and the remaining hydrogen and nitrogen form ammonia; if the urine has been regularly thrown over the dung-heap, it immediately decomposes, and here are another set of ingredients—the phosphates and salts of ammonia in solution, which join and enrich the already formed liquid which runs from the dunghill," and thence is washed by the rains into the sea, and is there the best food for fishes: this is the true reason why salmon so get up into our rivers, to meet the carbonic acid flowing down streams from the bog lands all round the coasts, throughout the world.

As boys can be had for a penny to twopence per day in Ireland, and almost everywhere, it would pay well to employ them to follow the cattle in the fields, six months in the year, with a basket of peat ashes, to cover the droppings with it, in order to secure and prevent the escape of the large volumes of ammonia, constantly manuring the atmosphere, as Sir H. Davy states, instead of the fields.

Mr. Skilling, of Glassnevin, near Dublin, stated at the meeting of the Market Hill Agricultural Association, that lime, so much prized in Kerry, is actually condemned, if not used with caution. It is not in itself a *manure*, but merely acts as a stimulant, like a dose of physic, to the particles of earth, and makes them permeable, for the sun's rays to get deep into the ground; whilst it decomposes parts only of these particles *in due time and order*, as vegetation requires their *suction*, and also that other particles may absorb the ammonia of the atmosphere, which is only withdrawn in imperceptible quantities, as rain brings it down from the heavens.

WEST DERBY, near Liverpool,
18th June, 1844.

WEST NORFOLK AGRICULTURAL SOCIETY.

On Wednesday, June 19, the annual meeting of this society was held at Swaffham. The exhibition of stock was larger than in any previous year. About 400 sheep of various kinds were exhibited, all of a first-rate description; and comprising Norfolk, Southdown, Leicester, and half-breds. The bulls, cows, and heifers were very superior; especially those of the Earl of Leicester, Lord Hastings, and Mr. Hudson, of Castleacre. The show of entire cart horses and mares was larger than last year.

The dinner was served up at the Assembly Rooms, by Mr. Page, of the Crown Inn. About 120 gentlemen sat down. Lord Hastings presided, supported on his right by the Earl of Leicester, and on his left by — Elves, Esq.; H. E. Blyth, Esq., was in the vice-chair.

The customary toasts having been disposed of, the health of Lord Hastings was proposed by T. R. Buckwork, Esq. Lord Hastings acknowledged the compliment, and proposed "Prosperity to the East Norfolk Association, hoping it would follow the example of the Western one, by offering prizes and inviting the competition of all England."

Mr. E. C. Bailey, Acting Secretary of the East Norfolk Agricultural Association, rose and said. He felt gratified in saying, that the East Norfolk society was now open to competition, not only from West Norfolk, but also other counties.

Mr. Hammond proposed "The Health of the Earl of Leicester," with three times three.

The Earl of Leicester was received with renewed cheers. He felt that he was yet a stranger among them; that he was a young farmer, and knew little about farming; and he would leave subjects connected with it in other hands. He would merely say, as a toast had been put into his hands to propose, that he gave with the greatest pleasure, "Success to the West Norfolk Agricultural Association." He looked upon it as a very important society. He proposed to give a prize next year for the best three shearling ewes reared without artificial food, to be proved by a certificate.

Mr. Blyth, one of the committee of the West Norfolk Association, acknowledged the toast.

The President proposed "The Health of Mr. Hammond." He had received a letter from Mr. Milnes, the late secretary, begging to send in his resignation.

Mr. Hammond said—When we lose a valuable servant it is a matter of inconvenience and regret; but I am happy to name a person qualified to fill the vacant position, and I am certain he will fully discharge the duties of the secretaryship; I mean Mr. Everitt.—There are several subjects of congratulation to us all this day. I congratulate you on the presence of the noble lord in the chair; on the extensive show of stock, and the large assembly; all of which prove that farming is making some progress in men's minds. Formerly, farmers told you how little they grew. Now they tell you how much. That is a great improvement. Now, if you go into the society of intellectual farmers, you will hear them talk of their business—of how they can produce the best crops by the most economical means, and how to apply chemistry to farming; and all these things tend to open men's minds, and to make them better farmers and better men.

Mr. R. Sillett, hon. sec., then read the list of premiums awarded.

The President then gave "The Successful Candidates," which was drunk with much applause.

Mr. Lugar, of Hengrave, Suffolk, returned thanks as a successful competitor in the Southdown class; and said, it gave him great pleasure to know that his stock had met with approbation.

Mr. J. Hudson also returned thanks. He was proud that his bull had carried off the Swaffham cup,—a prize that he esteemed more than all the others.

The President then gave " The Unsuccessful Candidates."

Mr. Hammond rose to acknowledge the toast, as one of the unfortunate individuals included in it, though he felt that it was rather a dull business; however, he looked forward to better times, when he would be included in the previous toast.

The Earl of Leicester proposed " The health of Mr. Blyth."

Mr. Blyth begged leave to return thanks, and said, at present he was engaged in a small experiment in the cultivation of flax, which had excited a good deal of attention in the county. He had tried a small piece of oats against flax, and he believed the flax must do well indeed to beat the oats; but if he could bring the cultivation of flax to be in some small degree profitable, it would deserve attention, for it would open a wide field for the employment of men, women, and children; and that was an important consideration, if the cultivation could be rendered at all profitable.

The President said, as Mr. Blyth had mentioned experiments on flax, he begged to say, that there were others in the room who had tried experiments last year. Perhaps Mr. Warnes, who was present, could throw some light on the subject. In conclusion, his Lordship proposed Mr. Warnes's health.

Mr. Warnes said, he had attended the meeting for a double object—to obtain all the information he could, and to communicate any that it might be in his power to give. He stood before them as the advocate of the British farmer and labourer, and he was satisfied that the culture of flax would be for the interests of both. He exhibited some fine samples of flax, and described the nature of the land where they were grown. Lord Hastings had alluded to his own flax, and he had the pleasure of presenting a specimen of it to the meeting, grown on land comparatively worthless. He exhibited another sample grown by Mr. Blyth, and prepared by an Irish lad, imported by the Association. Mr. Warnes proceeded to give an account of Mr. Atkinson's crop at Walcot. That gentleman had authorised him to state the particulars as to an acre of flax grown last year. He had six coombs three bushels of seed, which he had sold at 26s. per coomb; and 2 tons 6 cwt. of flax stalks that he sold at £2 per ton, thus realising £13 7s. 6d. for the acre. This crop was now being worked out by Mr. Brown, at Trimingham, and afforded employment to four men, two women, and two girls. The price given for scutching was 1s. 9d. per stone, and 3d. for breaking—being 2s. per day each for four men, 10½d. each for two women, and 6d. per day earned by the two girls. He wished now to state the experience of his father, resident at Bolwick-hall, near Aylsham. He had sown six pecks of seed on rather less than an acre last year. The produce was 32 st. 8 lb. of fine flax, and 4 st. 13 lb. of coarse—making in all 37 st. 7 lb. The fine tow and flax from the hands was 4 st. 6 lb., the inferior tow 12 st. 7 lb.—or 16 st. 13 lb. in the whole. Of the broken flax stalks there were 75 bushels, weighing 9 lb. per bushel, from the scutching tool; 111 bushels from the breaker, at 8 lb. a bushel; 12 bushels at the ear ends, at 9 lb. a bushel—making 119 st. 5 lb., or 14 cwt. 17 lb. The estimated value of the crop was £18 5s.

Mr. Hammond.—What do you use the chaff for?

Mr. Warnes.—It is the finest manure ever yet discovered. There was no reason whatever for flax being considered an exhausting crop more than others. Any crop would exhaust the land more or less. A large crop of wheat would exhaust the land. His wheat this year was the finest in the parish after flax. Many gentlemen had come over to look at his wheat, and all considered that it was a remarkably good crop. He begged to correct an error in respect to growing flax for the seed only, or for the fibre only. It was impossible to grow flax without the seed, for the plant must arrive at a certain state of maturity; and he believed the best flax was that from which the seed was saved. He had sown 12 acres of flax last year, and most of the produce remained in its original state, owing to his time being so occupied in promoting the cultivation of that plant. He considered that his crop would improve by keeping, and the probability was that he would allow it to remain in the same state till next year. Flax could now be prepared and used as a substitute for hemp; a process had been discovered, by which it was rendered impervious to water. One hundred and twenty nets had been made of this material and sent out for use in the mackarel fishery. The fishermen said these nets absorbed less water and caught more fish than the others. In regard to fattening cattle with the compound, his present plan was, to mix linseed not with corn, but with grass. At this time the grass by itself was become worth nothing for fattening cattle; but if mixed with linseed, it would be found superior to any other description of food.

Mr. Hammond hoped he had not misled any one by saying that flax was not an exhausting crop. It was not by any means a replenishing one, at least it had not proved so to his pocket. The company soon after separated.

THE BRITISH

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CIRENCESTER AGRICULTURAL COLLEGE.

On Monday, the 1st of July, an influential meeting was held at Cirencester, Earl Bathurst in the chair, when a series of resolutions were proposed and carried which no longer leave the college question a matter of doubt. This is an exceedingly gratifying termination; and we hail it as a propitious symptom of the movements which must necessarily be made to sustain the impulse which agriculture has latterly received. The institution of an agricultural college is an important experiment: much has been said for it, and much against it, but that it would be of great advantage to agriculture, if *properly conducted*, is a fact which few will attempt to deny; and we therefore call on those in authority to have it so conducted, that, while it answers the end for which it was established, it shall reflect the highest honour on its conductors. But a fair trial must be made; much vigilance and much patience, as well as ample funds, will be required, and must be given; and if, at first, the institution should not realise what its projectors anticipated, let them only persevere, and success will ultimately reward their exertions.

The following are the resolutions above alluded to:—

First,—Moved by T. S. Sotheron, Esq., M.P., and seconded by Edward Holland, Esq., That it appearing by the report of the committee appointed at the last general meeting, that the establishment of an institution for giving a scientific and practical education to young persons intended for agricultural pursuits will receive adequate support, Resolved—That the present subscribers, and those who may hereafter become subscribers, until the whole capital shall be subscribed for, constitute a company, to be incorporated by Royal Charter, limiting individual responsibility, for the establishment of such an institution.

Second,—Moved by James Crowdy, Esq., and seconded by Dr. Daubeney,

That the affairs of the company shall be carried on by a president, vice-president, and committee of management, which is hereby authorised to apply for a charter, and to arrange with Earl Bathurst the lease of the farm; to call in subscriptions, and to be invested with full powers to act in other respects; to consist of eighteen shareholders, five to form a quorum, and one-third of the number to go out annually by rotation, but to be re-eligible; and that the following form the committee:—

Earl Bathurst,
T. H. S. Sotheron, Esq., M.P.,
Edmund Holland, Esq.,
Sir M. H. Hicks Beach, Bart.,
Raymond Cripps, Esq.,
Rev. J. M. Prower,
Mr. Henry Howell,
Mr. Peter Matthews,
Mr. T. Arkell,
Dr. Daubeney,
Charles Lawrence, Esq.,
Rev. Thomas Maurice,
Mr. Daniel Trinder,
Mr. Edward Bowly,
Mr. Edmund Buck,
Mr. James Kearsey,
Mr. Thomas Stone,
Mr. Thomas C. Brown,
Mr. Thomas Iles.

Third,—Moved by Rev. J. M. Prower, and seconded by Mr. Kearsey,

That Earl Bathurst, Earl Ducie, T. H. S. Sotheron, Esq., and Edmund Holland, Esq., be the trustees of the institution.

Fourth,—Moved by Mr. A. R. Fewster, and seconded by Rev. T. Maurice,

That the Council of the Royal Agricultural Society of England having given their sanction to the holding of a meeting during the session at Southampton, for the purpose of making the objects of this institution more generally known amongst agriculturists, Resolved—That a meeting be held on Tuesday, the 23rd July, at Southampton, and that the committee appoint a deputation to call and attend such meeting.

Fifth,—Moved by Mr. Edward Bowly, and seconded by Mr. Charles Lawrence, That Earl Bathurst be president, the Earl of Ducie vice-president, and Mr. Robert J. Brown honorary secretary, to be ex-officio members of the committee.

Sixth,—It was resolved unanimously,

That the thanks of this meeting be given to Earl Bathurst for taking the chair.

REPORT OF THE COMMITTEE.*

The committee report that in pursuance of the resolution in that behalf passed at the general meeting, they have, by public advertisement and otherwise, invited tenders of a suitable size for the proposed college. They are happy to inform the meeting that they have received the offer of a farm on lease from Earl Bathurst, which, from its general character and situation, is, in their opinion, so well adapted for the purposes of the institution, that they have no hesitation in recommending that an application be immediately made to his Lordship for the terms on which he would be willing to let the farm. The committee have every reason to believe the terms would be entirely satisfactory to the subscribers. They have great satisfaction in reporting further a very handsome offer on the part of Earl Bathurst, to advance at very moderate interest, to be added to the rent, one-half, not exceeding £2000, of the expense of the necessary buildings.

This farm now consists of about 400 acres of arable, and 30 acres of pasture land, and is situated about one mile from Cirencester, and accessible by two good turnpike roads.

The committee are further enabled to report that the application for a charter has been so favourably received by Government, as to leave no doubt that one will be granted, provided the society consent that any surplus of income, after paying dividends at the rate of 4 per cent on the subscribed capital, shall be employed to increase the efficiency of the institution.

The committee continues to receive such increasing support and encouragement, that with the aid of the fund for building offered by Earl Bathurst, they are of opinion that all necessary steps for the establishment of the college may at once be safely taken.

(Signed) RAYMOND CRIPPS.
Chairman.

CIRENCESTER, July 1, 1844.

SCOTTISH AGRICULTURAL CHEMISTRY ASSOCIATION.

The usual half-yearly general meeting of this association was held the beginning of July, in the Museum of the Highland and Agricultural Society, Edinburgh, Lord Dunfermline in the chair. The secretary read the report of the committee. A large portion of this document was taken up with an account of the results of the appointment of an agricultural chemist and three assistants. Professor Johnston had delivered lectures in no less than 25 districts of the country, to the members of agricultural societies and other persons, and his labours had been attended with very beneficial results. It deserves to be mentioned, that several of the parochial schoolmasters in the west of Scotland, perceiving the wishes of the farmers that their children should imbibe some knowledge on these subjects, prevailed on Professor Johnston to compose a little treatise of a popular nature for their use; and one of them has recently applied to learn, whether during the vacation of his school he may be permitted to attend the laboratory in Edinburgh, with the view of making himself more familiar with the science. The farmers of his neighbourhood have agreed to raise a sum of money among themselves to defray his expenses. If, either this year or in a future year, a sufficient number of such applications were made, the committee announce that Professor Johnston would be willing to give a gratuitous course of lectures to schoolmasters during three weeks of their autumn vacation.

As illustrating the advantages which have followed the labours of Professor Johnston in the laboratory, the committee state the following. 242 analyses had been made:—Soils 90, guano 77, waters 25, ashes of plants 14, marls 9, miscellaneous 27. Besides the complex chemical manipulations which these 242 analyses imply, Professor Johnston has had to conduct a correspondence with respect to each separate analysis, when the member applying for it was not residing in Edinburgh. This correspondence, which was altogether independent of the letters asking for advice on other matters, occupied, of course, a large share of his time. From this correspondence we select a few examples, and we trust the subject will not be lost sight of at the approaching meeting at Southampton, and by the Council of the Royal Agricultural Society of England.

1. As to analysis of *soils*.

Mr. F., a proprietor in the west of Scotland, having sent some samples of soils from his estate for examination, wrote as follows to Pro-

'fessor Johnston after receiving the analyses :—" From your analyses of my soils, it appears that they are deficient in magnesia and the phosphates, which accounts fully for the very beneficial effects of both these substances when applied to my soils as a manure. It is a striking instance of the good that may be obtained from accurate analysis, showing that time may be saved by minute attention to its indications, and that the total failure of a crop may be prevented."

2. As to analysis of *guanos.*

The several kinds of artificial guano, well known in the market under different names, and selling at as high a rate as natural guano, were, during the last six months, sent to the laboratory by members of the association, that their agricultural value might be determined. In each case it was found that the *prices charged were from one-third to one-half above the real value of the compound,* and that in truth *it would be better to spend the sum proposed to be laid out on these mixtures in buying natural guano.* It is hardly necessary to add that the advice so given was very readily followed.

But the farmer must be on his guard against adulterations, even in what is sold as *natural guano.* For very recently a large quantity of manure alleged to be genuine guano, was sent down to Dumfries for sale, by one of the most respectable* houses in London, which, on examination, was found to contain 75 *per cent of chalk, and to have been coloured by spent bark, ground to a fine powder.*

The committee further mention that a chemical manufacturer in Leith had a quantity of waste refuse, considered of no value, and which had accumulated on his premises to the extent of about 100 tons, when it occurred to him to send a sample of it for analysis to Professor Johnston. He found that it contained substances extremely valuable as a manure, and recommended that it should be sold as such, at the rate of £3 per ton. The result of this discovery has been, as may be supposed, eminently beneficial, not only to the manufacturer, but to the farmer, and in so far to the country at large.

Further, the committee may refer, in illustration of the benefits derived from analysis, to a letter addressed to their secretary by a member of the association, and one who is himself an extensive farmer :—

" Sir,—In answer to your query,—Whether or not, as a practical farmer, I have as yet benefited from the existence of the Agricultural

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* If one of the " most respectable" houses in London resorted to such meanness to cloak fraud, what is to be expected from houses which are not considered " respectable ? " Surely that word is sadly misapplied.

Chemistry Association? I beg to say that my annual outlay for foreign manures, such as rape-dust, guano, bones, &c., upon an average of years, is much about £150. Previous to the existence of the association, I was obliged to make my purchases with no other means of judging of their probable genuineness or fertilizing properties than by what their appearance indicated; but this last season I have invariably made my selection after obtaining a minute analysis of the different samples, and choosing the one most favourably reported on by the chemist, and upon delivery of the stock, had a second analysis performed, in order to satisfy me that it was not inferior to the samples from which I bought. I have no hesitation, therefore, in concluding that by such means I have been enabled to spend my money with a degree of certainty and satisfaction, which amply repaid me for the trifling expenses I incurred. In illustration, I may mention, that part of a cargo from which I obtained my supply was found inferior to the rest by 10 per cent, but I, of course, was enabled, by the plan adopted, to demand compensation, which was immediately conceded.

"With regard, likewise, to the feeding of my live stock. Having obtained from merchants samples of such foreign cake as they had, I submitted them for analyzation to Professor Johnston, and from amongst them was enabled to select one which was offered to me as a manure, which I purchased at 85s. per ton. Having confidence in what it was composed of, I gave a regular supply to a breeding stock of black-faced ewes, at a very small cost indeed; and I am not exaggerating my probable gain by that discovery, at from £50 to £60. The ewes, though feeding on stinted hilly pasture, were in a condition at lambing time never witnessed in former seasons.

"I have never as yet got any soil analyzed; but I doubt not that much ignorance prevails among farmers as to the application of lime; and by simply obtaining a correct report from the chemist as to whether that ingredient is present to the necessary extent in the soil, one might determine upon a system of management, either most profitable to adopt, or save ourselves an outlay which might be very needlessly and ruinously made."

Sir J. Hope, Bart., proposed the adoption of the report.

Mr. Scott, Craiglockhart, seconded the motion.

Mr. Milne, advocate, congratulated the meeting on the state to which the association had arrived; and having been one of those who took part in originating this institution, he might be allowed to say, that certainly the difficulties encountered had been overcome to a greater extent than he ever anticipated. The great difficulty was as to the manner of making known to them its objects, and of explaining how the institution could be managed. The association could now recommend itself; for, by the machinery which had been organised by the half-yearly reports, and by the admirable lectures of Professor Johnston in every part of Scotland, they were able to bring the merits and working of the association in such a manner before the public, as must secure the confidence and support of agriculturists throughout the country. He might perhaps be allowed to advert to two points of a general nature, brought out by the report, with a view of showing their importance; he alluded to the advantages arising to members of the association from receiving analyses of manures, and also to the best way of affording instruction on the subject of agricultural chemistry. Few people had any idea of the large sums which were now spent by farmers on foreign manures—and which it was necessary they should procure, from the want of ordinary farm-yard dung. Reference had been made in the report to farmers in this neighbourhood who expended £150 a year in this way, and this was no uncommon case. The value of bones and bone-dust annually imported into this country was about £91,700; of rape-cake £82,500; and of guano there had been imported to Liverpool alone 5924 tons, which had bought by the farmers at an expense of about £71,000. This year guano, to the extent of £100,000, had been sold by one house at Liverpool; and it was believed that 300 ships had gone out, or were going, for more guano, the value of which would probably exceed two millions of money. Considering, therefore, the enormous amount of the sums laid out, and necessarily now laid out by the farmers of this country on these manures, it was most important to afford them means of checking adulteration. But adulteration prevailed to an almost incredible extent. At Hull, it appeared that a villanous preparation of pounded limestone was sold for genuine bone-ash. Five bushels of bones to 95 bushels of pounded limestone constituted this mixture—containing, therefore, only 5 per cent of bones, and for which 90s. a ton was charged—rather dear for limestone. There was another case in Cheshire, where 85 per cent of the manure was common chalk; and the farmer had been paying £10 for every 30s. worth of manure. Bone-dust had been found mixed with gypsum. In another case the bones were soaked in water to increase the weight, so that the farmer got 7 cwt. of water with every ton of bone-dust. Guano, too, was often a mixture of all manner of worthless ingredients. In one instance where a gentleman paid £12 a ton, " the largest estimate that could be made of the real guano present in the sample, amounted to *three per cent*, including feathers, which, however, appeared to belong to sparrows and pheasants. On the other hand there were 50 per cent of stones and yellow earth." The real guano in this case cost the purchaser nearly £400 a ton. A guano sold lately at Manchester contained 75 per cent of brick-dust; one from Derbyshire, 10 per cent of saw-dust, and 6 per cent of clay; and another from the same quarter had ground bark to the extent of 12 per cent. As to the case mentioned in the report where adulterated guano had found its way to Dumfries, it was *the only instance* known to the committee of adulteration in Scotland during the last six months; and it certainly was a very remarkable fact, that while England was almost inundated with these spurious mixtures, Scotland was comparatively free; whether the dealers knew that there was a check here, and therefore it was that they practised fraud chiefly on the English farmer, he did not know. He was glad to see that several leading agriculturists mean, during the meeting of the Agricultural Society at Southampton, to propose the establishment of a protection society against such frauds. The other point to which he would advert, had reference to the proposal made by parish schoolmasters, especially in the west of Scotland, to assist in affording instruction to the boys attending their schools in the science of agriculture. In the north of Ireland an institution for giving agricultural instruction had long existed—the Templemoyle Institution—resorted to by all the grades interested in farming. Smaller establishments had been introduced within the last ten years, both in England and Ireland. Dr. Kirkpatrick very recently had established several in the county of Antrim, which appeared to afford good ground to think that the Scotch parochial schools might afford the same facilities. The boys there, besides being taught all the ordinary branches of elementary education, were on three days in the week instructed in gardening and husbandry; for which purpose five or six acres of land were rented by the schoolmaster. The teacher received £30 annually from the National Society, and £30 from local subscriptions and the scholars, the cost to each child being only ½d. per week; and he was able out of the produce to pay a rent to the landlord.

The meeting shortly afterwards separated.

MEETING OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND AT SOUTHAMPTON.

The sixth annual meeting of this important body of agriculturists, landowners, and others interested in the progress of agriculture, commenced on Tuesday, the 23rd of July. The selection of Southampton for the southerly meeting was most judicious, as Cornwall, Devon, Somerset, Dorset, Hampshire, Sussex, Surrey, Kent, Wiltshire, Gloucestershire, Berkshire, Oxfordshire, and the Channel Islands, could readily contribute their share to the attractions of the show. The weather, too, was as fine as could be desired, and the facility of railway conveyance, from almost every part of the country, and of steam-boats from Portsmouth, the Isle of Wight, Weymouth, the Channel Islands, France, Belgium, &c., to the place of meeting, increased the population of Southampton and the neighbouring villages to an amount beyond precedent.

EXHIBITION OF IMPLEMENTS.

This truly magnificent exhibition took place at Portswood, a village situated about two miles east of Southampton. The price of admission to the public was 2s. 6d.; and never certainly was there seen before such an illustration of the skill and industry of our agricultural implement makers. Nothing could surpass the admirable arrangements. The whole space occupied was substantially fenced in, and bounded upon one side by the temporary local offices of the directors and judges. About one-half of the ground was devoted to the show of implements, and the other half to the exhibition of live stock. The implements were ranged under cover of long open tents, extending the whole length of the ground, each exhibitor having a portion of the tents appropriated to his inventions. The total number of agricultural implement makers who exhibited was 97, some of whose stands occupied a quarter of an acre. The carts attracted particular attention, and some of them were not only very ingenious, but remarkably elegant in form. The ploughs, too, were admirable. The chaff-cutters, mills, and tile-making machines, were also regarded with great interest.

When the number of implements to be judged is taken into consideration, the task of the judges must have been very arduous; but we believe that their decisions gave almost universal satisfaction.

TRIAL OF THE IMPLEMENTS.

This very interesting portion of the proceedings took place on the farm of Mr. C. Gator, at Swathling, about 4 miles from Southampton, and it is estimated that it was attended by upwards of 12,000 spectators.

The field selected is a large level clover ley, and adjoins the railway; but the ground was not in good condition, being unusually hard from the long drought. Precisely at twelve o'clock the ploughing-match commenced. Sixteen ploughs started, among which were two specimens of American ploughs, presented by Mr. Colman. The contrast between the working of these trans-Atlantic and the English ploughs was most striking, and was the most perfect practical refutation to the remarks of Daniel Webster, who, on his return to his own country, stated that he had not seen any implement in England worthy of comparison with those of America. The work of these ploughs—compared with the level and accurate furrows made by the English plough, which appeared as though they were cut out by a plane—was coarse, rough, and irregular. The work of the competing ploughs, with the two exceptions we have alluded to, was very good, considering the state of the soil. One of the ploughs was a new implement made by Messrs. J. R. & A. Ransome, of Ipswich, and has a moveable nose-piece, which adjusted the pitch of the share either to take more or less hold of the ground, or laterally to give it an inclination more or less toward the land. This plough won the prize of £10 and a silver medal in competing with the others as a heavy-land plough; and also won the prize of £10 and a silver medal in its competition on the light land. Another of the ploughs was also a new implement by the same exhibitors, the peculiar feature of which was, that the mould-board is adapted for turning furrows 4½ inches deep and 9 inches wide, so as to leave the angles of the furrow-slice precisely at 45 degrees. There was another and a strong plough, by the same exhibitors, fitted for deep ploughing in tenacious land.

Mr. Locock's patent plough for laying furrows all in one direction, and which was awarded a prize of £5, was another of the competitors. The peculiar advantage in Lowcock's patent plough is, that its construction admits of turning and laying the furrows all at the same angle, and in the same direction, to the right or left alternately, as it passes up or down the field; thus combining the properties of the turnwrest plough, with the advantage of retaining the curved form of the mould-board, as used on the most approved single plough. It is formed with two shares, and the front curves of the mould-boards are counterparts of each other; while the hinder curves of the mould-boards are formed by a fly, which, turning on a centre, alternately presents the continuation of the curve of either the right or left mould-board, as required to be used. The handles are attached by a hinge on the centre of the plough, and are the only parts which require to be shifted in transposing the direction of the plough. When the ploughman has completed the furrow turned to the right he reverses the handles; at the same time the draught-chain, to which the horses are attached, is, by the act of their turning, carried on a rod to the opposite end of the plough. The fly on the mould-board, by its own pressure against the soil, assumes its correct position, and the implement is at once in order for turning the furrow to the left without further adjustment.

The following are

THE AWARDS FOR IMPLEMENTS.

1 Messrs. J. R. and A. Ransome, for a heavy-land plough, £10 and silver medal.
2 Messrs. J. R. and A. Ransome, for a light-land plough, £10 and silver medal.
3 Mr. R. Garrett, for a drill for general purposes, £20 and silver medal.
4 Mr. J. Smyth, for a turnip-drill depositing manure with the seed, £10 and a silver medal.
5 Earl Ducie, for the Uley cultivator, £10 and silver medal.
6 Earl Ducie, for a patent chaff-cutter, £10 and silver medal.
7 Messrs. J. R. and A. Ransome, for a hand-draining tile and pipe machine, £20 and silver medal.
8 Messrs. Sandars, Williams, and Taylor, for a set of patent harrows, £5.
9 Mr. D. Coombs, for an Oxfordshire wagon, £15 and silver medal.
10 Mr. Hornsby, for a drill presser, £10 and silver medal.
11 Mr. D. Harkes, for a churn, £5.
12 Mr. D. Harkes, for an expanding horse-hoe, £5.
13 Mr. J. Reid, for a subsoil pulveriser, £10.
14 Mr. Crosskill, for a clod-crusher, £20.
15 Mr. J. Bruce, for a skim-plough, £5.
16 Messrs. Ransome, for Locock's patent plough, £5.
17 Mr. Garrett, for a patent horse-hoe, a silver medal.
18 Mr. Stratton, for Gingell's cheese-press, silver medal.
19 Mr. Hornsby, for a cake-crusher, £5.
20 Mr. Cambridge, for a steam-engine, £5.
21 Mr. Hill, for a sheep fencing, silver medal.
22 Mr. Pearce, for a backband tug, silver medal.
23 Mr. Cooch, for a barley hummeller, silver medal.
24 Mr. Deane, for a French burr-stone hand-mill, silver medal.
25 Mr. Garrett, for a Springall's stack stand, silver medal.
26 Mr. Gardner, for a turnip-cutter, £5,
27 Messrs. James, for a George's weighing machine, £5.
28 Mr. Stratton, for a Fry's bone breaker, £2.
29 Mr. Hill, for a cow-crib, £2.
30 Messrs. Ransome, for a set of horse-workers with bean-splitters, linseed-crusher, chaff-cutter, &c., &c., £30.
31 Messrs. Tasker and Fowle, for a set of iron machinery for drawing water, silver medal.
32 Earl Ducie, for a set of screw spanners, silver medal.
33 Messrs. J. Hall & Co., for a Constable's trefoil and clover-drawing machine, £5.
34 Mr. J. Knight, for a new patent hop and malt kiln, £5.
35 Mr. J. Read, for a patent fire-engine, £5.
36 Mr. R. Stratton, for a water-cart, £5.
37 Mr. R. Stratton, for a harvest-cart, silver medal.
38 Earl Ducie, for a Richmond cart, silver medal.
39 Mr. R. Stratton, for an agricultural spring cart, silver medal.

WEDNESDAY.

To-day there has been a great influx of visitors, by special trains, &c., and the town may be said to be well nigh full; but, in consequence of the extravagant demands for accommodation of every kind, many of those who would have been found the most profitable visitors, are sojourning at the adjoining villages, rather than submit to the extortion which is attempted to be practised upon them. His Royal Highness the Duke of Cambridge arrived this morning, by one of the mixed special trains which left London at seven o'clock, and arrived here at ten minutes before nine. His Royal Highness was, by his own desire, met privately at the railway station by Col. Henderson, the mayor of Southampton; but nevertheless the arrival was announced by a salute from the batteries. His Royal Highness proceeded immediately in the Mayor's carriage to his worship's residence, where he breakfasted, thence to the show-yard to inspect the exhibition of implements. His Royal Highness was received at the yard by the stewards, and was accompanied by them and by the Duke of Richmond and Earl Spencer through the exhibition.

The visitors to the implement exhibition were very numerous again to-day. Most of them appeared to be practical men, and examined the implements with care and intelligence, criticised their different parts and probable performances with that acuteness and confidence which showed how thoroughly their various excellences were understood and appreciated. The exhibitors were, in many instances, present, working and explaining their machines. A considerable number of ladies added life and variety to the appearance of the criticising groups, clustered in lines along the columns of machines. On the outside of the show-ground a great number of implements were at work, surrounded by groups of intelligent observers.

A perfect city of booths for the dispensation of creature comforts, and boasting all manner of pompous titles, has sprung up round the fenced-in yard, like suburbs round a walled town. There are eating booths, drinking booths, dancing booths, and caravans and tents in which curiosities without number are hourly exhibited. To give some idea of the charges at which the good folks dispensed their hospitality, we may mention that in one of the common canvas-roofed booths surrounding the exhibition ground, a plate of chicken and ham was marked up as dispensed there for the moderate sum of six shillings! A pretty constant stream of omnibuses, coaches, cars, cabs, and other vehicles, was kept up between Southampton and the ground.

The implement makers generally express themselves much gratified with the result of the show, as a great many orders have been already given to them.

AGRICULTURAL COLLEGE.

A public meeting for the purpose of establishing an agricultural college was held in the Freemasons' Hall, at two o'clock. The attendance was not very numerous, as most of the agricultural visitors were engaged at the implement yard.

The chair was taken by Mr. Pusey, who briefly stated the object of the meeting, and pointed out the advantage that would accrue to the agriculturist from the establishing such a college. The project had been taken up by many of the leading agriculturists, not only in the immediate district in which it was intended to establish the college, but in other and distant counties. Lord Bathurst had, in addition to providing a suitable farm of 400 acres, on which the college and other buildings were to be erected, advanced £2000 in furtherance of the object.

The Duke of Richmond, in proposing the first resolution, said that he appeared before them, not as a member of the Royal Agricultural Association, for the rules of that society precluded the members from interfering in anything but the immediate object for which they periodically met, but he stood before them as a country gentleman, anxious to promote an object so laudable, and so beneficial to the agriculturists of the kingdom. They all must regret that their early education had not given them the advantage of the knowledge of chemistry, as practically adapted to agricultural purposes. He had declined to take shares in that society, upon the principle that every shareholder should have time to attend to the details of the society to which he had put his name, so that by so doing he might not mislead others to add their names, upon the faith of seeing his name, and thereby supposing that he would attend to its practical operations. He would avoid that evil, as he was aware that his many other avocations would prevent him from giving sufficient attention to the details. He, however, so highly approved of the society, that although he could not become a subscriber for the reason he had stated, yet he most gladly gave a donation to promote its establishment. He would not have the committee be too sanguine of making any profit from the farm. He was a farmer himself, and he was aware that farming was not so prosperous as most other pursuits. He was of opinion that schools of agriculture were much wanted in this country, and he had great pleasure in proposing the first resolution (which was seconded by Dr. Playfair):—"That schools of agriculture are much wanted in this country, in which a knowledge of the sciences now admitted to be essential to the successful pursuit of agriculture may be learned, in connection with the practical working of a farm on the most approved principles."

Mr. Estcourt said, that the object of the meeting had his most cordial support, and he moved the following resolution (which was seconded by Mr. N. Goddard):—"That the plan for the establishment of an agricultural college near Cirencester, explained by the deputies attending this meeting, is calculated to effect that desirable object."

. The next resolution was to have been proposed by Lord Spencer, but the Duke of Richmond explained to the meeting that that nobleman was unavoidably absent, in consequence of being in attendance on his Royal Highness the Duke of Cambridge, who was inspecting the show-yard. In the absence of Lord Spencer, Dr. Buckland proposed, and Mr. Eyle seconded the resolution:—"That this meeting warmly recommends the agricultural community to give every support and encouragement to the establishment of this college, which they regard as the first step in the right-direction, for training up the rising generation of farmers upon a sound foundation; and they would especially urge on farmers generally the importance of securing to their children, intended for the same occupation, the great advantages to be derived from the kind of education provided by such an institution."

The Duke of Richmond proposed, and Dr. Daubeny seconded, a vote of thanks to Mr. Pusey, for the service he had rendered to the agriculturists generally, and for his conduct in the chair.

Mr. Pusey briefly replied, and congratulated the meeting upon the object they had in contemplation being fully carried out, when they saw the noblemen present, and the member for the University of Oxford, as well as two of its distinguished professors come forward to take them by the hand.

The Council Dinner.

The chief event of to-day has been the council dinner, which was held at the Victoria Rooms, commonly called the Archery Rooms. The dinner was provided in very excellent style by Bathe and Breach, of the London Tavern. Nearly 400 persons sat down. The chair was taken at a few minutes after five o'clock, by Earl Spencer, the president of the society, supported by the Duke of Richmond on his right, and the Duke of Leinster on his left.

Grace having been said by the chairman, and the cloth withdrawn,

The chairman gave "The Queen." The toast was drunk with enthusiasm.

"The Queen Dowager, Prince Albert, the Prince of Wales, and the rest of the Royal Family," was the next toast, which was also drunk with enthusiasm.

Lord Ashburton proposed "The Professors of Science."

Dr. Buckland returned thanks. The only return which he and his brother professors could make for the kindness conferred upon them on these occasions was to take the opportunity of submitting to them any information which had recently been obtained, and which might be of interest to them as the occupiers of the soil. The point, perhaps, of the greatest interest was the fact which he could state to them, that the district of the country in which they now were, Hants, Dorsetshire, Sussex, and parts of Kent and Surrey, were more susceptible of agricultural improvement than, he would almost say, any other part of England. In the north there were hundreds of thousands of sterile acres, which perhaps might be reclaimed to the plough, but for the climate; for they must know that the bases of these mountains were more elevated than the highest ranges of their hills in the south. The professor then proceeded to say, that by the expenditure of about £5 to £10 an acre, numbers of acres in that desolate tract could be converted from sterile fields into fertile corn land. He referred to a friend of his in Ireland, who had, by draining and manuring, converted land not previously worth 2s. 6d. an acre into a valuable property, now producing four tons of hay per Irish acre. He need not point to the example of Colonel Challinor, who had converted parts of Bagshot Heath into fertile fields. The professor then pointed out, that in these districts of the country there were natural manures always at hand which were most powerful fertilizers. Thus, for instance, clay and marl would be valuable manures for a chalky soil, whilst thin heavy clay lands, by means of draining, might be made infinitely more productive than they were at present. Between Reading and Basingstoke he had seen fine fields of barley and turnips raised from the bed of heavy London clay, and this he saw on the property of the greatest of living men—the Duke of Wellington. The Speaker of the House of Commons had also doubled and trebled, by the mere use of the subsoil plough, the produce of land previously somewhat barren, on the borders of Ascot Heath, and this produce might still further be increased. They had heard much lately of artificial manures, and he had in his hand a map of the world, published at Liverpool, showing those parts where guano was most likely to be obtained. That manure he believed to be the most powerful and the most valuable of natural manures. There were now, he was informed, no less than 600 vessels at sea, of upwards of 60,000 tons burden, in search of guano, so that next year there was no doubt guano would be both cheap and abundant. The present dry season had been fatal to every experiment with guano. He, therefore, urged those who had made experiments this year to let them go for nothing, but to take advantage of the approaching cheapness of guano, and to sow it only when it was raining, for if the weather was dry much of its virtue evaporated. He also urged them to be cautious in purchasing guano, for the sand was frequently blown up on the deposits of guano, and there was much temptation to adulterate it. The only method to avoid this was to apply to persons of established reputation. It was important to remember that they must sow the guano when the plant was in a state of active vegetation, or at least when the seed would be in a state of vegetation within a few hours after the guano was committed to the earth. The essential part of guano was ammonia; it was as volatile as the contents of a scent bottle, and 24 hours of sunshiny weather would evaporate it. His recommendation, then, was to try guano in this year, and try it well. The value of an experiment could only be tried by pounds, shillings, and pence. The question was, whether it would pay? If it would pay, let them continue its use; if it would not pay, then let them abandon it.

The president then called attention to the award of the prizes of cattle (which will be found at page 306). After about half completing the list, the president said he thought the company wanted a glass of wine, and called on Mr. Hayter.

Mr. Hayter, M.P., expressed his gratification at the result of the day's proceedings. He had followed the precepts of the society in breeding his stock—viz., he had looked to the blood of the sire. The sire of the animal he had exhibited had carried off the society's prize at Oxford. The descendant of that stock had now been successful, and he hoped that his progeny might in future years claim many prizes at their hands.

The president then finished reading the list of prizes of sheep, and concluded by proposing the health of the successful competitors in sheep. The Duke of Richmond's name as one of these was received with enthusiastic cheers.

The Duke of Richmond rose to endeavour to return thanks to them, as the party who had gained the second prize in the rams and the first in the ewes. He felt grateful to them for the manner in which they had received the announcement of the prizes awarded to him. He attributed it to the circumstance that they knew he had long been a competitor for their prizes, and that though successful sometimes, and beaten often, he had yet proved himself to be persevering, and a good beaten man. He knew that he had good sheep, but he scarcely expected to have been successful in a district famous for the finest short-woolled sheep in the universe. These prizes were the more valuable to those who gained, inasmuch as the judges who awarded them never knew to whom the animals belonged. The noble duke then returned thanks on behalf of the other successful competitors, to whose merits he paid a graceful tribute. They would pardon him for referring to a matter a little personal to himself. He had found a report spread all over the town that some of his cattle had been poisoned. Now, as a flockmaster, he was certainly anxious for the character of his flock, but he was still more anxious for the labourers of his native county. Anxious as he was to compete for their prizes, and gratified as he was in succeeding, he should consider that success dearly bought indeed if any one should believe that the labourers of Sussex could be guilty of such an act. Those labourers, he might be permitted to say, he had always the greatest gratification in meeting at societies for the reward of meritorious agricultural labourers, and if he were jealous of anything, it was of the maintenance of their present well-deserved good character. It was true that some of his cattle had died, but not the slightest suspicion attached to any one being the cause of their death. He was certainly afraid that to some of their lean stock shows people were apt to send their animals too fat. It was very possible that to a certain extent these animals had died from inflammation. He did not know whether they had any oil-cake or not, but it was possible that they might have had a little. He feared he was trespassing on their attention, but he could not lose that opportunity of advocating the claims of those whose interests were the dearest to his heart—viz., the agricultural labourers. He knew that every owner and occupier of land present would concur with him, that it was their bounden duty to do everything in their power to improve and ameliorate the condition of that valuable portion of society. He would state what had been done in his county (Sussex). They gave there—as he was happy to say was given in most parts of the country—rewards to honest and meritorious labourers. But in Sussex they claimed this merit for themselves, that they were the first who had asked the successful candidates to dine at the same board with themselves, to partake of their hospitality, and to express to these honest though humble men what every one felt—viz., how desirous they were that the labourers should look up to their employers as their firmest and fastest friends, and that the owners and occupiers of land would yield to none in the desire to promote their prosperity and welfare. In mentioning this here, to men of whose influence in every district of the country he was well aware, he did it with the purpose of humbly recommending that they would follow the example of Sussex, whose experience had already shown that it was attended with the most advantageous results. He had received from the agricultural interest of this empire obligations which he could never sufficiently repay, and he again thanked them for the manner in which they had welcomed him.

"The Healths of the Successful Candidates in Pigs and Extra Stock" having been given,

Mr. Pusey rose to return thanks. He expressed his great gratification that the Berkshire breed of pigs had sustained their ancient reputation. In the United States of America a Berkshire boar and sow had sold for £100. Like his friend, Mr. Hayter, he had sought for good parents for his stock, and the result was, the success which had thus unexpectedly called him before them.

The president, after pronouncing an eulogium on the extraordinary mechanical genius that had been evinced by the agricultural implement makers, said, they had that day such an exhibition of implements as had never before been seen. He had great faith in the application of science to agriculture; he had great faith in the application of chemical, geological, and botanical science; but he had still greater faith in the application of mechanical science, and he begged to propose "The Health of the Exhibitors of Agricultural Implements."

Mr. Cottam returned thanks. It was gratifying to him to say that the exhibition of this year was superior to its predecessors. The society had continued to give such a stimulus to the makers of agricultural implements as could not fail to call forth continued improvements. He thanked the society for admitting one of his profession into their council, in order to obviate those little difficulties which might arise from a want of technical knowledge. He was gratified to say on behalf of his brethren that they were perfectly satisfied with the arrangements which the society had adopted in order to meet their views. When they remembered that his brethren spent their days amidst the rattling of machinery, and their nights in their studies for the purpose of improving their machinery and meeting the views of the public—when they reflected that one man had spent £500 in attempting to make a drop drill, and another £2000 in attempting to make a perfect plough—they would not believe that the implement makers were slack in endeavouring to bring agricultural machinery to a perfection equal to that of manufacturing machinery. In this attempt he believed they had not failed, for he could fearlessly challenge all Europe—aye, and the great western world to boot—to show such an amount of mechanical ingenuity as had been exhibited at Portswood that day. The speaker then adverted to some little difficulties and differences which had occurred last year in reference to the trial of implements. He was happy to say that the council had readily and most kindly met all those difficulties, and now they no longer existed. The speaker then adverted to the excellence of a large number of those machines to which no prizes were awarded. Many of these, however, were only in an incipient state, and would lead to future perfection. After dwelling on the importance to the young agriculturist of making himself generally acquainted with the elements of agricultural and mechanical science, Mr. Cottam concluded by returning his sincere and heartfelt thanks for the honour conferred on him by his brethren.

Mr. Handley proposed "The Health of the Stewards of the Yards," who had performed their arduous task, especially in the selection of the ground for the trial of the implements, so much to the satisfaction of all parties concerned.

Mr. W. Miles, M.P., returned thanks. He was always ready to give his best exertions for the promotion of that science, which he believed from his heart was the well-spring and foundation of our national prosperity. His colleagues were anxious that full satisfaction should be given to those implement makers who, at so much expense to themselves, had brought their machines to the society for the purpose of exhibition. This was, perhaps, the first real trial of implements that had been made, and it was most gratifying to find that it had been even more successful than had been anticipated. The hon. member then proceeded to describe the mode in which the experiments were conducted. He referred to the failures in consequence of the dryness of the weather with experiments made in various manures. He recommended that those experiments should be made at the expense of the society, for he warned all small farmers against incurring the expense of making such hazardous experiments, but rather to wait until the results of the experiments of others were ascertained. In reference to the implements, of which the hon. member spoke highly, he called on the implement makers to remember that their great object should be simplicity and cheapness, for the object of the society was not to provide cumbrous and expensive machines for the rich, but *useful, practical, and simple machines, within the range of the purse of the poorest cultivator of the soil.* The highest attributes of mechanical excellence he had at length seen attained this year, in the manufacture of a plough (Ransome's), which was equally good for light and heavy land, and which was stamped with a double medal, as the best for both. He concluded by returing thanks for the compliment that had been paid to him.

The Marquis of Downshire proposed "The Health of the Judges who awarded the Premiums."

Sir W. Heathcote then proposed "The Health of the President."

Earl Spencer returned thanks. He was overpowered with the reception which he had received, and the expression of hearty good-will which the toast of his health had received. He congratulated the society upon the exhibition of implements. He had not seen the show of stock; but from all that he heard, he thought that it was very likely to prove a most satisfactory one. He proposed "The Earl of Hardwicke." The toast was duly acknowledged, and the company broke up at a reasonable hour.

THURSDAY.

The partition between the cattle and implement yards having been taken down, the whole immense area was now thrown open to the public, to witness the exhibition of stock for the first time. The doors opened at six in the morning, and the eager anxiety of the farmers was evinced by their assembling, to the amount of several hundreds, around the doors of the yard, by half-past five in the morning, in order to obtain the first sight of the animals. From that hour to late in the evening there was a continuous stream of vehicles and pedestrians to and from Portswood and Southampton, choking up the whole road, and surprising everyone where such crowds could come from.

It was exceedingly pleasing to see the great number of farmers who attended the show, and the still greater number of agricultural labourers, who criticised the merits of the various animals and implements with the utmost freedom, and frequently with great pertinence. Throughout the whole surrounding district of country a sort of general holiday has been given to the labourers, in order that they might visit Southampton if they pleased. This evinces great good feeling, and is one among other proofs that the exertions of agricultural societies, generally, tend to draw still closer the bonds of union, not only between the farmers and their landlords, but between the farmers and their labourers.

CATTLE SHOW.

It may be remarked generally that the cattle show, though, as might have been expected from the locality of Southampton, not so large as on previous years, and from being held in a district of the country exhibiting different features from its predecessors, was yet a very large one, divided into not less than nearly 600 lots. While in some respects there was an improvement in the quality of some of the cattle, our impression is, that, taken as a whole, the exhibition was inferior in this respect, to some of its predecessors. The part of the yard appropriated for the stock contained 20 sheds, each 252 yards long. Some of the sheds were subdivided, to meet the various wants of the respective animals they were intended to receive. For instance, the sheds for the reception of brood mares were closely boarded off, and separated from the rest; those for the stallions and bulls were of greater strength than the others. The boars were in pens of double iron hurdles. The short-horn belonging to Mr. Cooper, which carried off the first prize, was a splendid animal, both as regards size and symmetry. The animal belonging to Mr. Hayter, which carried off the second prize for the short-horns, attracted a good deal of attention; but we think that shown by Mr. Booth, of Catterick, and the heifer shown by Mr. Booth, of Warlaby, almost equalled any animals we ever saw. Mr. Maw, of Tetley, Lincolnshire, exhibited a perfectly white bull; this animal was certainly a beautiful creature, and was deservedly admired. Among the yearling heifers, we may also mention those belonging to the Duke of Buccleuch, Cator and Atkins, as good specimens of their class. The Hereford bull, belonging to Mr. Carpenter, which gained the prize of 20 sovereigns, was a very symmetrical animal. The bull belonging to Mr. Turner, which gained the first prize of 30 sovereigns, together with the bulls of this breed exhibited by Lord Portman,, Mr. T. Nurcombe, and Mr. Reynolds, as also a milch cow and an in-calf heifer, both belonging to Mr. G. Turner, and which both gained prizes, were beautiful specimens of the Devon breed. Some of them were finely proportioned. One of the cows in milk of this class had a remarkably handsome calf by her side. Mr. Turner's bull was regarded by many competent judges as undoubtedly the finest beast in the yard. The cattle from the Channel Islands were very creditable to their owners, but presented no point calling for particular notice.

The sheep occupied a very large space, and were in no way inferior to any previously exhibited. The well-earned reputation of the Leicesters, whose purity and value are in a great measure owing to the untiring exertions of Mr. Bakewell, Mr. Culley, and other eminent breeders, was well sustained, not only by those who carried off the prizes, but by the unsuccessful competitors also. The show of Southdowns was really beautiful; and we could not fail remembering the pleasing fact mentioned by Mr. Spooner, that this valuable breed of sheep can trace a long line of pure descent from a period antecedent to the time of William the Conqueror. With this celebrated breed the name of the late Mr. Ellman, of Glynde, is historically associated, as being the first and most successful of its improvers; and so jealous are the present Messrs. Ellman of maintaining the high character of their flocks, that, we believe, they will not allow one with even a spot on its face or ears to remain among them. As usual, Mr. Jonas Webb and Mr. Grantham were in the field, and the former gentleman carried off the first prize for the shearling ram. The animal which obtained this prize was one of the most beautiful specimens of Southdowns we ever witnessed, and will add to the already great celebrity of its respected owner. The Duke of Richmond, to whom the second prize was awarded, had a formidable competitor in Mr. Webb, and, to any but the most experienced judges, the task of deciding to whom the prize was due, would have been extremely difficult. The other animals in this class, particularly that of Mr. Grantham's, which carried off a prize, and Mr. Beaven's, called forth well-deserved encomiums.

The show of horses was rather small, and generally did not attract much attention. There were, however, brilliant exceptions. One of these was a thorough-bred stallion, exhibited by the Duke of Richmond, and a more beautiful creature, in point of form and symmetry, could hardly be produced. The first prize of 30 sovereigns for the best stallion for agricultural purposes, was awarded to Mr. Catlin, of Bushy, Suffolk, who exhibited a magnificent animal; and the second to the Earl of St. Germains. Mr. Catlin's horse was very generally admired. He travelled 1430 miles during the present season. The Earl of St. Germain's horse was conveyed by steam from Falmouth. Among the other successful competitors we may mention the Right Hon. Mr. St.

John, Mr. R. Curtis, and Mr. T. Glasspool, who exhibited very fine animals. That belonging to Mr. Glasspool was purchased by him at the last Southampton May Fair, for a sum under £20. Many of the horses shown were of large dimensions. In the 5th class there were no less than six thorough-bred stallions.

The pigs, although last on the list, occupied a very respectable position; some of them were extraordinary creatures. The boars which carried off the prizes were very fine specimens of their class. Mr. W. F. Hobbs, of Markshall, was again the successful competitor for the prize for the best boar of a small breed. The animal belonging to Mr. Goodlake, a perfectly white one, attracted considerable attention. The commendation by the judges of Mr. Hobbs's Essex boar and sows was well deserved.

Seeds, &c.

The principal seedsmen also had stands in the implement yard, which were well stocked with the choicest seeds, grasses, and other agricultural produce, and deservedly attracted much attention.

List of Prizes for Stock.

SHORT-HORNS.

Judges.—Mr. Hugh Watson, of Keillor, near Angus; Mr. W. Torr, of Riby, near Caistor; Mr. Charles Stone, of Kingston, near Kegworth.

Class 1.—To the owner of the best bull, calved previously to the 1st January, 1842, 30 sovs., awarded to Mr. John Cooper, of Bonkwood, Thargarton, Southwell, Notts, for his short-horned bull, 3 years 1 month and 13 days old, bred by himself.

To the owner of the second best ditto ditto, 15 sovs., awarded to Mr. Hayter, M.P., of Wells, Somerset, for his short-horned bull, 2 years and 10 months old, bred by Mr. Unsworth, of Blackrod, Lancashire.

Class 2.—To the owner of the best bull, calved since the 1st of January, 1842, and more than 1 year old, 20 sovs., awarded to Mr. W. Foulds, of Kirklington, near Southwell, Notts, for his short-horned bull, 2 years 3 months and 22 days old, bred by Mr Milward, Hexgrove-park, Southwell.

Class 3.—To the owner of the best cow in milk, 15 sovs., awarded to Mr. John Booth, of Killerby, Catterick, Yorkshire, for his short-horned cow, 3 years 2 months and 5 days old, bred by himself.

Class 4.—To the owner of the best in-calf heifer, not exceeding 3 years old, 15 sovs, awarded to his Grace the Duke of Devonshire, of Chatsworth, Bakewell, Derbyshire, for his short-horned heifer, 2 years and 5 months old, bred by Mr. Watson, of Walkeringham, Bawtry, Yorkshire.

Class 5.—To the owner of the best yearling heifer, 10 sovs., awarded to Mr. R. Booth, of Warlaby, Northallerton, Yorkshire, for his short-horned yearling heifer, 1 year 2 months and 3 weeks old, bred by himself.

HEREFORDS.

Judges.—The Rev. J. Smythies, of Gray Friars, Colchester; Mr. James Peake, of Hanwood, near Ross; Mr. J. Ashdown, of Uppington, Shrewsbury.

Class 1.—To the owner of the best bull calved previously to the 1st of January, 1842, 30 sovs., awarded to Mr. W. Perry, of Monkland, Leominster, for his Hereford bull, 2 years 7 months and 28 days old, bred by himself.

To the owner of the second best ditto ditto, 15 sovs., awarded to Mr. G. Brown, of Avebury, Wilts, for his Hereford bull, 2 years and 7 months old, bred by himself.

Class 2.—To the owner of the best bull, calved since the 1st of January, 1842, and more than 1 year old, 20 sovs., awarded to Mr. J. Carpenter, of Eardisland, near Leominster, Hereford, for his Hereford bull, 1 year 8 months 3 weeks and 4 days old, bred by himself.

Class 3.—To the owner of the best cow in milk, 15 sovs., awarded to Mr. G. Drake, of the Manor Farm, East Tytherley, Stockbridge, Hants, for his pure Hereford cow, 8 years and 10 months old, bred by Mr. Price, of Pool House, Upton-on-Severn.

Class 4.—To the owner of the best in-calf heifer, not exceeding 3 years old, 15 sovs., awarded to Mr. J. N. Carpenter, of Eardisland, near Leominster, Herefordshire, for his Hereford in-calf heifer, 2 years 8 months and 18 days old, bred by himself.

Class 5.—To the owner of the best yearling heifer, 10 sovs., awarded to Mr. J. Walker, of Burton, near Worcester, for his Hereford yearling heifer, 1 year and 8 months old, bred by Mr. C. Walker, of Sutton.

DEVONS.

Judges.—Mr. John Hudson, of Castle Acre, near Swaffham; Mr. Jos. Druce, of Ensham, near Oxford; Mr. Ed. Franklin, of Ascot, near Benson, Oxon.

Class 1.—To the owner of the best bull, calved previously to the 1st January, 1842, 30 sovs., awarded to Mr. G. Turner, of Barton, near Exeter, for his Devon bull, 2 years and 8 months old, bred by himself.

To the owner of the second best ditto ditto, 15 sovs., awarded to Mr. Thomas Nurcombe, of Hopcott Farm, Minehead, Somerset, for his pure Devon bull, 4 years and 9 months old, bred by himself.

Class 2.—To the owner of the best bull, calved since the 1st January, 1842, and more than 1 year old, 20 sovs., awarded to Mr. T. Reynolds, of Raddon Court, Thoverton, Exeter, for his pure North Devon bull, 2 years and 5 months old, bred by Mr. A. Parsons, of Lifton, Devon.

Class 3.—To the owner of the best cow in milk, 15 sovs., awarded to Mr. G. Turner, of Barton Exeter, for his Devon cow, 6 years and 2 months old.

Class 4.—To the owner of the best in-calf heifer, not exceeding 3 years old, 15 sovs., awarded to Mr. G. Turner, of Barton, near Exeter, for his Devon in-calf heifer, 2 years and 2 months old.

Class 5.—To the owner of the best yearling heifer, 10 sovs., awarded to Mr. James Hole, of Knowle, near Dunster, Somerset, for his Devon yearling heifer, 1 year 7 months and 2 days old, bred by himself.

CATTLE OF THE CHANNEL ISLANDS BREED.

Judges.—Mr. W. R. Browne, of Davenport-street, Bayswater; Mr. J. Clayden, of Littlebury, Saffron Walden; Mr. M. Gibant, of Main Land, St. Lawrence, Jersey.

Class 1.—To the owner of the best bull, calved previously to the 1st January, 1843, 15 sovs., awarded to Mr. W. J. G. Phillips, of Ealing Vicarage, Southampton, for his Channel Island bull, 2 years and 4 months old, bred by himself.

Class 2.—To the owner of the best bull, calved since the 1st January, 1843, and more than 1 year old, 10 sovs., awarded to Mr. W. Woolcock, of St. Peter's Parish, Hants, for his 1 year and 5 months old Jersey bull, bred by Colonel Le Couteur, of Belle Vue, Jersey.

Class 3.—To the owner of the best cow in milk, 10 sovs., awarded to Mr. C. W. Robin, of Petit Minage, St. Helier, Jersey, for his pure Jersey cow, 2 years and 6 months old, bred by Mr. J. Hocquard, of Granville, Jersey.

Class 5.—To the owner of the best yearling heifer, 7 sovs., awarded to Mr. John Hume, of Beau Regard, St. Helier, Jersey, for his pure Jersey yearling heifer, 1 year 1 month and 10 days old, bred by Major Bridgenam, St. Laurens, Jersey.

CATTLE OF ANY BRED, OR CROSS,

Not qualified to compete in the foregoing classes.

Judges.—Mr. J. Hall, of Wiseton, Bawtry; Mr. N. Smith, of Martley, Worcestershire; Mr. H. Palfrey, of Upton-on-Severn.

Class 1.—To the owner of the best bull, calved previously to the 1st January, 1842, 30 sovs., awarded to Mr. W. Brine, of Tolpuddle, near Dorchester, for his pure longhorned bull, 4 years and 5 months old, bred by the late Mr. Thomas Wyatt, of Hanwell-park, near Banbury.

To the owner of the second best ditto, 15 sovs., awarded to Mr. Thomas Jenner, of Cowdray-park Farm, Petworth, Sussex, for his pure Sussex bull, 3 years and 4 months old, bred by himself.

CLASS 2.—To the owner of the best bull, calved since the 1st January, 1842, and more than 1 year old, 20 sovs., awarded to Mr. T. Dowden, of Mitcheldever, Andover-road, Hants, for his Hereford and Durham bull 2 years and 2 months old, bred by himself.

CLASS 3.—To the owner of the best cow in milk, 15 sovs., awarded to the Hon. M. W. B. Nugent, of Higham Grange, Hinckley, Leicestershire, for his pure Leicester or long-horned cow, 10 years and 2 months old, bred by Mr. Ball, of Smowford Lodge, Long Ickington, Southam, Warwickshire.

CLASS 4.—To the owner of the best in-calf heifer, not exceeding 3 years old, 15 sovs., awarded to the Hon. M. W. B. Nugent, of Higham Grange, Hinckley, Leicestershire, for his pure Liecester or long-horned in-calf heifer, 3 years and 11 days old, bred by himself.

CLASS 5.—To the owner of the best yearling heifer, 10 sovs., awarded to Mr. W. J. Calhoun, of Binderton, near Chichester, for his short-horned and Hereford yearling heifer, 1 year and 2 months old.

HORSES.

JUDGES.—Mr. W. F. Karkeek, of Truro, Cornwall; Mr. Charles Bowman, of Greatford, Bourne; Mr. William Day, of Ensham, near Oxford.

CLASS 1.—To the owner of the best stallion for agricultural purposes, of 4 years old and upwards, 30 sovs., awarded to Mr. Thomas Catlin, of Butley, Woodbridge, Suffolk, for his cart stallion, 5 years old, bred by himself.

To the owner of the second best ditto ditto, 20 sovs., awarded to the Right Hon. the Earl of St. Germans, St. Germans, Cornwall, for his aged cart stallion.

CLASS 2.—To the owner of the best 2 years old ditto, foaled since the 1st January, 1842, 15 sovs., awarded to the Right Hon. Lord St. John, of Melchbourne, Kimbolton, for his cart stallion, 2 years and 2 weeks old, bred by his lordship.

CLASS 3.—To the owner of the best mare and foal for agricultural purposes, 20 sovs., awarded to Mr. W. Fowle, of Market Lavington, Devizes, Wiltshire, for his cart mare and foal.

To the owner of the second best ditto, 10 sovs., awarded to Mr. G. W. Roberts, of King's Walden, Hitchin, Herts, for his cart mare and foal; mare bred by himself.

CLASS 4.—To the owner of the best 2 years old filly for agricultural purposes, 10 sovs., awarded to Mr. W. Fowle, of Market Lavington, Devizes, for his 2 years old filly, bred by Mr. R. Daintree, of Hemmingford Abbotts, near St. Ives, Huntingdonshire.

CLASS 5.—To the owner of the best thorough-bred stallion, which shall have served mares at a price not exceeding 3 guineas (and with a groom's fee of not more than 5s.), in the season of 1844, 30 sovs., awarded to Mr. R. Curtis, of Basingstoke, for his thorough-bred stallion, 5 years old; was got by Langar, dam by Cervantes, out of Maruana, by Selim.

LEICESTER SHEEP.

JUDGES.—Mr. Thomas Metcalf, Harleston, near Northampton; Mr. H. Bateman, Asthally, Witney, Oxon; Major Brown, Welbourne, Grantham.

CLASS 1.—To the owner of the best shearling ram, 30 sovs., awarded to Mr. J. G. Watkins, of Woodfield, Ombersley, Stourport, Worcestershire, for his pure Leicester ram, 17 months old, bred by himself.

To the owner of the second best ditto, 15 sovs., awarded to Mr. T. E. Pawlett, of Beeston, Biggleswade, Bedfordshire, for his Leicester ram, 15 months old, bred by himself.

CLASS 2.—To the owner of the best ram of any other age, 30 sovs., awarded to Mr. T. E. Pawlett, of Beeston, Biggleswade, Bedfordshire, for his Leicester ram, 28 months old, bred by himself.

To the owner of the second best ditto, 15 sovs., awarded to Mr. T. E. Pawlett, of Beeston, Biggleswade, Bedfordshire, for his Leicester ram, 40 months old, bred by himself.

CLASS 3.—To the owner of the best pen of five shearling ewes, 10 sovs., awarded to Mr. J. G. Watkins, of Woodfield, Ombersley, Stourport, for his pen of five pure Leicester shearling ewes, bred by himself.

To the owner of the second best ditto ditto, 5 sovs., awarded to Mr. J. Beasley, of Chapel Brampton, Northampton, for his pen of five improved Leicester shearling ewes, 16 months old, bred by himself.

SOUTHDOWN SHEEP.

JUDGES.—Mr. Thomas Weall, Woodcote Lodge, Croydon; Mr. R. Emery, of Harston Place, Storrington; the Hon. Wm. Gage, of Westbury, Bishop's Waltham.

CLASS 1.—To the owner of the best shearling ram, 30 sovs., awarded to Mr. Jonas Webb, of Babraham, Cambridge, for his Southdown ram, 16 months old, bred by himself.

To the owner of the second best ditto, 15 sovs., awarded to his Grace the Duke of Richmond, of Goodwood, Chichester, Sussex, for his Southdown ram, 16 months old, bred by his grace.

Class 2.—To the owner of the best ram of any other age, 30 sovs., awarded to Mr. J. Beaven, jun., of Gore Farm, Market Lavington, for his Southdown ram, 52 months old, bred by himself.

To the owner of the second best ditto 15 sovs., awarded to Mr. T. Ellman, of Beddingham, Lewes, Sussex, for his Southdown ram, 27 months old, bred by himself.

Class 3.—To the owner of the best pen of five shearling ewes, 10 sovs., awarded to his Grace the Duke of Richmond, of Goodwood, Chichester, for his pen of five Southdown shearling ewes, 16 months old, bred by his grace.

To the owner of the second best ditto ditto, 5 sovs., awarded to Mr. D. Barclay, M.P., of Eastwick Park, Leatherhead, Surrey, for his pen of five Southdown shearling ewes, 17 months old, bred by himself.

LONG-WOOLLED SHEEP,

Not qualified to compete as Leicesters.

Judges.—Mr. W. Gillet, of South Leigh, Witney; Mr. John Elliot, of Chapel Brampton; Mr. W. Anderson, of Oakley, near Bedford.

Class 1.—To the owner of the best shearling ram, 30 sovs., awarded to Mr. C. Large, of Broadwell, Burford, for his new Oxfordshire ram, 16 months old, bred by himself.

To the owner of the second best ditto, 15 sovs., awarded to Mr. C. Large, of Broadwell, Burford, Oxon, for his new Oxfordshire ram, 16 months old, bred by himself.

Class 2.—To the owner of the best ram of any other age, 30 sovs., awarded to Mr. E. Handy, of Sevenhampton, Andoversford, Gloucestershire, for his improved Cotswold ram, 40 months old, bred by himself.

To the owner of the second best ditto, 15 sovereigns, awarded to Mr. E. Handy, of Sevenhampton, Andoversford, Gloucestershire, for his improved Cotswold ram, 40 months old, bred by himself.

Class 3.—To the owner of the best pen of five shearling ewes, 10 sovs., awarded to Mr. E. Smith, of Charlbury, Oxon, for his pen of new Oxfordshire long-woolled ewes, 16 months old, bred by himself.

To the owner of the second best ditto ditto, 5 sovs., awarded to Mr. James Linton, of Henningford Abbots, St. Ives, Huntingdonshire, for his pen of five Lincoln and Leicester ewes, 16 months old, bred by himself.

SHORT-WOOLLED SHEEP,

Not qualified to compete as Southdowns.

Judges.—Mr. J. Chapman, 29, Park-street, Dorset-square, London; Mr. J. Harris, of Hinton, Abingdon; Mr. T. Morris, of Ranscombe, Lewes.

Class 2.—To the owner of the best ram of any age above two years old, 20 sovs., awarded to Mr. Thomas Hutton, of Upton Gray, Odiham, Hants, for his Hampshire Down ram, 29 months old, bred by himself.

Class 3.—To the owner of the best pen of five shearling ewes, 10 sovs., awarded to Mr. W. Humphrey, of Chaddleworth, Newbury, Berks, for his pen of five Berkshire short-woolled ewes, 18 months old, bred by himself.

PIGS.

Judges.—Mr. John Farncomb, 5, Patriot-place, Brighton; Mr. Jesse Kemp, of Utterby Grove, Louth; Mr. R. J. Wiley, of Hornby, near Catterick.

Class 1.—To the owner of the best boar of a large breed, 10 sovs., awarded to Lieut. Colonel Thornhill, of New Park, Lyndhurst, Hampshire, for his boar, 36 weeks old, bred by Mr. W. P. Thornhill, of Stanton, Bakewell, Derbyshire.

To the owner of the second best ditto, 5 sovs., awarded to Mr. Pusey, M.P., of Pusey, Farringdon, Berks, for his Berkshire boar, 2 years and 1 month old, bred by Mr. J. Harris, of Hinton.

Class 2.—To the owner of the best boar of a small breed, 10 sovs., awarded to Mr. W. F. Hobbs, of Marks-hall, Kelvedon, Essex, for his improved Essex boar, 10 months old, bred by himself.

To the owner of the second best ditto ditto, 5 sovs., awarded to Mr. T. M. Goodlake, of Wadley-house, near Farringdon, for his boar of the Wadley breed, 1 year and 2 months old, bred by himself.

Class 3.—To the owner of the best breeding sow of a large breed, 10 sovs., awarded to Mr. P. Pusey, M.P., of Pusey, Farringdon, Berks, for his Berkshire sow, 1 year and 8 months old, bred by Mr. J. Blandy, of Kingston, Berks.

Class 4.—To the owner of the best breeding sow of a small breed, 10 sovs., awarded to Mr. A. P. Falconer, of Beacon Hordle, Christchurch, Hampshire, for his Yorkshire sow, 11 months and 3 weeks old, bred by Mr. J. W. Nutt, York.

Class 5.—To the owner of the best pen of three breeding sow-pigs, of the same litter, above 4 and under 9 months old, 10 sovs., awarded to Mr. J. House, of Bestwall, near Wareham, Dorset, for his pen of 3 Dorsetshire sow-pigs, 34 weeks old, bred by himself.

EXTRA STOCK.

Beasts.

To Mr. M. Goodall, of Evilith Manor, near Shiffnal, 7 sovs., for his 5 years and 1 month old cow of the Indian and French cross breed.

To Mr. G. Drake, of Manor Farm, East Tytherley, 2 sovs., for his 10 months old pure Hereford bull calf.

To Mr. G. Drake, 1 sov., for his 6 months and 3 days old cow calf.

Long-woolled Sheep.

To Mr. C. Large, of Broadwell, Burford, Oxon, 10 sovs., for his 4 years and 4 months old new Oxfordshire ewe.

Short-woolled Sheep.

To Mr. T. B. Northeast, of Tedworth, Marlborough, Wiltshire, 4 sovs., for his 2 years and 5 months old Southdown ram.

To Mr. T. B. Northeast, 2 sovs., for his 3 years and 5 months old Southdown ram.

To Mr. William Sainsbury, 4 sovs., for his 3 years and 7 months old Southdown ram.

Pigs.

To Mr. Hobbs, of Marks-hall, 2 sovs, for his 8 months old improved Essex boar.

To Mr. Hobbs, 2 sovs., for his 7 months old improved Essex boar.

To Mr. W. J. Calhoun, of Binderton, Chichester, 1 sov., for his 10 months old Sussex sow.

To Mr. Hobbs, 3 sovs., for his 9 months old improved Essex sow.

Horses.

To Mr. R. Curtis, of Basingstoke, 5 sovs., for his 4 years and 2 months old stallion.

To Mr. J. T. Glasspool, of Southampton, 5 sovs., for his 2 years and 3 months old three-parts bred mare.

The Pavilion Dinner.

At four o'clock the company assembled to dinner in the pavilion, which was erected for the purpose in the Fair-field, above bar. The pavilion was shorn of its former imposing dimensions by one-half, though still sufficiently spacious to accommodate 1300 persons. The pavilion, however, was very compact, supported in the usual manner by cast-iron rods and girders, and roofed in with oil-cloth, in case of rain. The tables were all placed on a level, instead of, as in former years, being raised in an amphitheatrical form from the centre platform. Two raised tables were on either side, at which the president and vice-president sat, together with the more distinguished guests, but many noblemen and gentlemen were dispersed through the body of the meeting, and consequently escaped our eye. The pavilion was lighted by two large windows, ornamented with stained glass. Over the high table was a ladies' gallery, which was filled with about 200 fair dames, for whom the gallantry of the stewards provided refreshments during the proceedings. Most of the leading agriculturists of the county were present, and exhibited much satisfaction at meeting their brother farmers at the festival board, and the opportunity of adding to that information which they had gained at former meetings, and acted upon with profitable results.

The chair was filled by Earl Spencer, the president of the society. The Duke of Richmond occupied the vice-chair.

Amongst the distinguished guests around those two noblemen were—the Chevalier Bunsen, the Duke of Leinster, the Marquis of Downshire, Earl Fortescue, the Earl of Chichester, the Earl of Scarborough, Earl Ducie, the Earl of Egmont, Lord Ashburton, Earl of Carnarvon, Lord Worsley, Lord Portman, Colonel Henderson (mayor of Southampton), the Warden of Winchester, Viscount Torrington, Lord Grosvenor, Viscount Palmerston, Mr. Bennett, M.P., Dr. Playfair, Mr. Colman, Lord Hatherton, Lord Harcourt, Dr. Buckland, Dr. Daubeney, Mr. Mayes, Earl of Essex, Lord Camoys, Earl Delawarr, Baron Mallet, Earl of Ilchester, Viscount Ingestre, Mr. Hope, M.P., Mr. David Barclay, M.P., Mr. Hudson, Sir John Easthope, M.P., Mr. T. King, Mr. E. A. Sandford, Mr. W. Shaw, Mr. Hayter, M.P., Colonel T. Austen, Mr. G. Kimberley, Mr. Miles, M.P., Mr. Shelley, Mr. Stansfield, M.P., Mr. Slaney, Colonel Challinor, Mr. W. Fisher Hobbs, Mr. Blanshard, Mr. T. R. Barker, Sir Charles Lemon, M.P., Mr. E. S. Chandos Pole, Sir Francis Lawless, Mr. Ellman, Mr. Kinder, Sir Robert Price, Mr. Stokes, Mr. E. Antrobus, M.P., Mr. Gordon, M.P., Mr. Blackstone, M.P., Mr. M. Phillips, M.P., &c.

The following gentlemen acted as stewards :—The Hon. R. H. Clive, M.P., David Barclay, Esq., M.P., John Hudson, Esq., Samuel Jonas, Esq., Fielder King, Esq., E. A. Sanford, Esq., William Shaw, Esq., R. A. Slaney, Esq., Henry Blanshard, Esq., Colonel Challinor, William Fisher Hobbs, Esq., Sir Charles Lemon, Bart., M.P., E. S. Chandos Pole, Esq., William Goodenough Hayter, Esq., M.P., George Kimberley, Esq., J. Villiers Shelley, Esq., W. R. C. Stansfield, Esq., M.P., Colonel Thomas Austen, Sir John V. B. Johnstone, Bart., M.P.; William Miles, Esq., M.P., Francis Pym, Esq., Thomas Raymond Barker, Esq., Samuel Bennett, Esq., William Henry Hyett, Esq., Sir Francis Lawley, Bart., John Ellman, Esq., John Kinder, Esq., Sir Robert Price, Bart., and Charles Stokes, Esq.

The speeches being much longer and not of such a practical nature as those of the Council Dinner, we are under the necessity of omitting them.

FRIDAY.

The meeting may be said virtually to have closed yesterday; but owing to the sale of cattle and implements announced for this day, a very large proportion of the distinguished visitors and great numbers of the farmers remained. No sooner had the time arrived for the auctioneeer to mount his rostrum, and a bell had been rung as a signal for the commencement of the sale, than hundreds were seen rushing to the place of rendezvous. It may naturally be supposed that bringing highly-fed cattle from their stalls, into an area surrounded by dense masses of people, was attended with some little difficulty and even inconvenience, but such was not the case. There was plenty of assistance, and no sooner had one animal fallen to the lot of a purchaser than another was instantly brought to supply its place. This order of things was continued until the conclusion of the sale. The committee very wisely ordered the payment of 1s. for admittance to the sale-yard, and this had the effect of keeping out the rabble, which, as a natural consequence, are always met with at places of this description.

The following are a few of the prices paid for the prize stock :—

Mr. W. Harvey, of Trellissick, Hagle, Cornwall, an improved short-horned bull, 4 years and 5 months old, bred by Mr. Peters, of Phille, Cornwall—£31 10s.

Mr. J. Herbert, of Powick, Worcestershire, a short-horned bull, 4 years and 3 months old, bred by Mrs. Strickland, of Apperley-court, Gloucestershire—£60.

Mr. H. L. Maw, of Tetley, Crowle, Lincolnshire, a short-horned bull, 2 years and 8 months old, bred by himself—£63.

Mr. C. H. Sidebotham, of Ashley Cottage, Altringham, Cheshire, a pure short-horned bull, 2 years and 8 months old, bred by Mr. Clarke, of Errington Grange—145 guineas.

Mr. J. Forrest, of Stretton, near Warrington, Cheshire, a pure short-horned bull, 1 year and 6 months old, bred by himself—£50.

Mr. W. Foulds, of Kirklington, near Southwell, Nottinghamshire, a short-horned bull, 2 years 3 months and 22 days old, bred by Mr. Millward, of Hexgrove Park, Southwell—£100.

His Grace the Duke of Devonshire, of Chatsworth, Bakewell, Derbyshire, a short-horned heifer, 2 years and 6 months old, bred by his grace—52 guineas.

Mr. W. J. G. Phillips, of Eling Vicarage, Southampton, a Channel Island bull, 2 years and 4 months old, bred by himself—£29 8s.

Mr. M. Fowler, of Little Bushy Farm, Stanmore, a pure Jersey cow, 3 years and 6 months old, bred by Major-General Sir E. Gibbs, of Government House, Jersey—£30.

Colonel Le Couteur, of Bellevue, St. Aubin's, Jersey, a pure Jersey cow, 5 years and 3 months old, bred by Mr. W. Le Metter, of Jersey—£26.

Mr. C. W. Robin, of Petit Minage, St. Helier, Jersey, a pure Jersey cow, 2 years and 6 months old, bred by Mr. J. Hocquard, of Granville, Jersey—£29.

Mr. J. Rougier, of St. Andre, Guernsey, a Channel Island cow, 4 years and 8 months old, bred by Miss Le Marchant, of St. Mary de Castro, Guernsey—£25.

The Duke of Richmond, a thorough-bred stallion, 4 years old, got by Sheet Anchor, out of Valencia, bred by the Right Hon. Lord G. Bentinck—£37. It is thought that this lot was bought in.

Mr. T. M. Goodlake, of Wadley House, Farringdon, Berks, a pure Sussex ram, under 17 months old, bred by himself—35 guineas.

Mr. E. Pope, of Mapperton, near Beaminster, Dorset, a Southdown ram, 27 months old, bred by himself—30 guineas.

Mr. E. Pope, a Southdown ram, 39 months old, bred by himself—20 guineas.

Mr. E. Pope, a Southdown ram, 39 months old, bred by himself—26 guineas.

Mr. E. Pope, a Southdown ram, 51 months old, bred by himself—28 guineas.

Mr. E. Handy, of Sevenhampton, Andoversford, Gloucestershire, an improved Cotswold ram, 17 months old, bred by himself—£21.

Mr. J. Linton, of Hemingford Abbots, St. Ives, Huntingdonshire, a pen of five Lincoln and Leicester ewes, 16 months old, bred by himself—£50.

Mr. J. Beckingham, of Ashe Overton, Southampton, a short-woolled cross ram, 17 months 25 days old, bred by himself—17 guineas.

Sir G. Morgan, a fine short-horned yearling heifer—£50.

Mr. John Cooper's beautiful short-horned bull, aged 3 years 1 month and 13 days, and to which the first prize of £30 was awarded, was bought in at £100.

It was previously understood that the owner of every animal offered for sale should have the privilege of one bidding, as a protection to himself; and this arrangement was found to work admirably. It prevented a great deal of what is technically called "running-up," and at the same time enabled the auctioneer to get through his business in a much quicker time.

Mr. Turner's pure Devon bull was sold yesterday to Lord Aylesford, for, we understand, £150. The same gentleman was also bid a fair round sum for his in-calf heifer and cow, but not enough to his satisfaction.

A great deal of business was done in the implement yard to-day. Yesterday and the day previous persons generally took a cursory glance, almost fearing that they should not have time to pass through the whole assemblage. To-day, however, the ground being more clear, scarcely any person was seen but a buyer. Mr. Etheridge, the patentee of a splendid machine for the manufacture of tiles, we understand, sold no less than 15 during the show, and when it is considered that the article is an expensive one (£43) it may be considered as no bad work. Indeed, we may repeat our former statement, and which is fully borne out by the remarks of Mr. Cottam, at the Pavilion dinner, that the implement makers are highly gratified with the results of the meeting.

On Tuesday 1280 persons were admitted to the implement show-yard, paying half-a-crown each, realising £160; on Wednesday 3600 persons were admitted at the same rate, realising £450; on Thursday 10,200 paid 2s. 6d. previous to twelve o'clock, to view the cattle and implements, and from that hour to six 13,300 went in at 1s. each, producing £1941. The total receipts for admission were upwards of £2550. The rush at the doors at twelve o'clock to obtain entrance at the 1s. fee, was far greater than was ever seen at the doors of Drury Lane on the night of a royal visit.

MEETING OF THE COUNCIL.

At twelve o'clock to-day the general meeting of the agricultural society took place at the Victoria Archery Rooms. The attendance was not very numerous, but there were many distinguished persons present; amongst them were, besides Earl Spencer, the Duke of Richmond, the Marquis of Downshire, Mr. Handley, M.P., Mr. P. Pusey, M.P., Mr. Kimberley, Mr. J. Kinder, Colonel Challoner, Mr. H. Gibbs, Mr. J. Delgairns, the Hon. Mr. Wilson, Sir R. Price, M.P., Mr. M. Munday, Mr. C. Brown, Mr. W. Brown, Colonel Le Couteur, Professor Sewell, and Mr. Holbeach.

Earl Spencer took the chair. He said, that according to the charter of the society, two meetings were to be held every year in London, and one in the country. This, as they were aware, was the general meeting for the country, and he would be happy to hear any suggestions from the gentlemen present as to the proceedings of the day.

The Duke of Richmond rose to propose that the thanks of the society should be given to the Mayor and Corporation of Southampton, for the readiness which they had shown to meet the wishes of the society, and to do all in their power to further its objects.

Mr. Shelley seconded the resolution, which was carried unanimously.

Mr. Shelley then proposed the next resolution, which was one of thanks to Mr. Gater, upon whose land the light implements had been tried, for the exertion he had bestowed on the preparation of the light land. To all suggestions that had been made to Mr. Gater he had paid the greatest and readiest attention, and the consequence of his exertions and his attention had been the excellent trial which took place. A similar vote of thanks was proposed to Mr. Spooner, of Ealing Farm, owner of the land on which the heavy implements were tried.

The resolution was seconded and carried unanimously.

The Marquis of Downshire then rose to propose that the thanks of the society be given to Earl Spencer for the ability with which he had presided over the meetings of the society during the whole of his presidency. He had no doubt that the great prosperity which the society had attained was to be attributed mainly to the great interest evinced in its proceedings by the noble earl, the zeal he had exhibited in carrying out its objects, and the great personal trouble and inconvenience to which he had put himself in order to give effect to its proceedings. The noble marquis concluded by proposing the vote of thanks.

Sir R. Price seconded the motion, which was carried by acclamation.

Earl Spencer begged to return the meeting his best thanks for the vote to which they had come. It had most undoubtedly been his earnest wish to promote to the utmost of his power the interests of the society. He had attended as far as he possibly could all the meetings of the society, but, leading as he did the life of a country gentleman and consequently living in the country, he could not attend all the meetings. He believed, however, that he had attended all that were of importance, and generally all the meetings of the council. He could assure them, that in retiring from the presidency of the society, it was not his intention to relax any efforts he had hitherto been able to make on behalf of the society. He should still continue to give them any benefit that could be derived from his best exertions. They must allow him to add the expression of his gratification that the society in general, and this annual meeting in particular, had been so successful.

Colonel Challinor said, that although the council did not recognise local committees, it would be highly indecorous were they to pass over the exertions of those gentlemen connected with the town and county of Southampton who had so generously lent them their assistance on the present occasion. An especial tribute was due from them to Mr. Mayes, the late mayor of the borough, who, during his mayoralty, had attended the meeting of the society at Derby, with a view to acquire information, and to make every necessary arrangement for the meeting of the society this year. To that gentleman, and to the other residents of Southampton, who had done so much to render the present meeting agreeable and successful, he had great pleasure in proposing to the committee that they should return their most grateful acknowledgments.

The Marquis of Downshire seconded the motion, which was carried amid acclamation.

Mr. Mauleverer then suggested to the society the desirability of making some alteration in the character of the prizes to be awarded at the next meeting. On the suggestion of the noble chairman, however, he did not insist upon going into the subject, but intimated that he would lay his suggestions before the council, with a view to their giving them attentive consideration.

Mr. Shelley then moved the thanks of the society to the chairman and board of directors of the South Western Railway, for the assistance they had given in bringing cattle to the show, and for the liberality they had evinced in reducing their charges to meet the occasion.

This motion having been also carried, the meeting broke up.

AGRICULTURAL PROTECTION SOCIETY.

At a meeting of the general committee, held at the society's rooms, 17, Old Bond-street, July 9, 1844, it was resolved:—

"That the publication committee be requested to issue a circular to each member of the country societies, stating our progress in the country, and the proceedings connected with us in the present session of Parliament; and calling upon the country societies to continue their efforts as far as possible in the cause of protection to the British agriculturist.

"(Signed) "RICHMOND, President."

SIR,

It will be seen, from the above resolution, that the general committee have considered it desirable, now that the session of Parliament is approaching its conclusion, to address to you a few words, for the purpose of recapitulating the proceedings of this society during the last six months—of directing your attention to its present position—and of offering some suggestions as to the course which circumstances call on the friends of protection to British industry to pursue. They, therefore, at their meeting on the 9th instant, requested the publication committee to prepare this address, and we can assure you we have never been called upon to discharge a more welcome duty.

The beginning of this year was signalized by a popular movement so remarkable—we mean the movement in behalf of agricultural protection—that its consideration may be permitted to occupy your attention for a moment. Men have often risen in obedience to some leader, or through the agency of some organization, with more or less violence, in defence of some right, or more frequently for the abrogation of some law, but such risings have generally been at some crisis, confined to some locality, and carried on either by the strength of numbers or the power of money; here, however, we beheld men coming forward, at one and the same moment, through the length and breadth of the land—not the richest from their fears, or the poorest from their impatience, but the middle class, the tenant farmers, inviting and receiving, on the one hand, the aid of the labourer, and on the other that of the landlord; rising for the maintenance of law, for the preservation of order, in assertion of a principle admitted by its opponents to have been recognized in this country since the time of Edward IV., and announcing their determination in a voice too calm to be blamed, too strong to be resisted: these are some characteristics of a movement so important in itself, and so honourable to all who bore part in it. We need not remind you here of the formation of the Agricultural Protection Society, or of the strong declaration in support of the Corn-Law, made by the first Minister of the Crown in his place in Parliament. But what has been the conduct of this society since? Two questions have been brought forward, which we regarded as connected with the cause for whose defence we are constituted—we mean the question of the repeal of the Wool Duties, and that of the renewal of the Bank Charter. Without again going over the arguments used in reference to either, suffice it to say, we found some of our ablest and most zealous supporters considered the abolition of the wool duties likely to be beneficial to the agriculturist; while others thought that, at worst, it would not be felt by him. We found great difference of opinion on this subject among our friends in the country, and the general committee therefore decided not to interfere, each country society remaining perfectly free to follow the course that might seem best to it. With respect to the Bank Charter Bill, our only concern with it was in reference to those clauses which we feared might cripple country banks in their means of affording accommodation to the farmer at particular seasons; and the danger of this appeared to the general committee sufficiently imminent to justify their sending round to every country society a resolution on that subject, accompanied by a form of petition for such as chose to adopt it. The result has fully justified this step. Modifications have been obtained in the bill, acknowledged by all to be great improvements, and satisfactory, with some exceptions, to the whole body of country bankers.

Thus, on the first question brought forward by Government, we have shown our moderation; and on the second, our strength; while on both we trust the event will prove us to have acted in accordance with the true interests of the country.

With regard to matters brought under discussion by individual members of either house, you will remember that a motion was submitted to the House of Commons for an address to the Queen, "representing that it is desirable to obtain authentic information upon all matters connected with the agriculture of the United Kingdom;" and although the agricultural members and the Government felt bound to resist this proposal in the form in which it was brought forward, yet, far from opposing the principle, we cordially acquiesced in it; and we believe that the more inquiry is made into our requirements, our difficulties, and our burdens, the better, provided always that such information be accurate, and the mode of obtaining it not inquisitorial.

After repeated delays, and after many proofs on the part of the League of a wish to avoid its discussion altogether, the Corn-Law debate came on; with what result we need not remind you. The free-trade minority was smaller than last year, and we believe that this diminution is not confined to the House of Commons, but is also found among the people at large. Many who might naturally have been led to believe, at first, that the abolition of our corn-laws would relieve the wants of the poor, and diminish the pressure of those difficulties which attend a complex state of society such as ours, have subsequently relinquished that belief, finding, from further investigation, that such relief would not be effected by free trade, and is not the object of the Anti-Corn-Law League. This brings us to the notice of a fact too notorious to be mentioned, except for the purpose of encouragement and congratulation—we mean the present unenviable position of that confederation. When we contrast their state and prospects now, with what it was in January last, when the League evidently calculated on overcoming the Government, and of obtaining some concessions, we cannot be otherwise than amused at the desperate efforts after cheerfulness its leaders still struggle to exhibit. Failures in meetings, failures in excitement, failures in elections, failures in debates, failures in divisions, have come fast and thick upon them, and we believe the common sense of the country is daily opposing itself to them more strongly. The Prime Minister and the President of the Board of Trade spoke out in the Corn-Law debate as wise and bold statesmen should speak. The Secretary at War, in his late election address, on his promotion to his present high office, said—"I shall continue to use my best exertions to secure for the agricultural classes that protection to which I consider them justly entitled; and I am prepared to maintain that system of Corn-Laws, which, after full consideration and discussion, was very recently established by the legislature."

The free-trade party declared that during the discussions of the Poor-Law Amendment Bill, they would animadvert on the connection of the Corn-Law repeal with the well-being of the labourer. The Poor-Law Amendment Bill has, subsequently to that declaration, been fully and amply discussed; but it has not been found convenient by members belonging to the League to utter one word upon such connection in the House of Commons: they were rash to make this declaration, but extremely prudent not to adhere to it. The case of the poor is the vantage-ground of the Corn-Laws; for if once it were proved that the reduction of wages, and the extension of those employments which diminish the happiness and shorten the duration of life, would be desirable for the poor, then those who uphold the great principle of protection would deserve the invectives of the League. But we never have been, and it is hoped we never shall be, slow to acknowledge the claims of the poor, their many privations, their many virtues, the wrongs England has, it may be unintentionally, done them, in her too eager pursuit of money, or the terrible vengeance that an angry Providence has before now permitted to the oppressed. These are truths whose practical recognition will prevent our cause from degenerating into a class one, and preserve it, as it is, a national one, in the best sense of that noble word.

And now, having shortly mentioned what we, during the last six months, have done, and what our adversaries have been unable to do, we should beware lest, in this hour of our triumph and their discomfiture, we forget the necessity of perpetual vigilance, perpetual preparation, perpetual communication with each other. The time may come—we know not how soon—when some new weapon may be forged against us, or one we thought broken or blunted, wielded again in the attack. It is evident that every foe to civil order may find instruments fitted for his purpose in joining the League. It is certain that the League itself would wish for nothing more than the chance of taking us by surprise. Let us, then, economize our resources, as men who expect a day of battle, and who are determined that their next day of battle shall be again their day of victory. Let us keep our mutual trust inviolate and inviolable. You have well understood our difficulties; and when we have been obliged to differ with some of your suggestions, you have, like men of sense and experience, readily acknowledged that considerations apparently of little moment in particular localities, must have great weight in a society such as ours. And these remarks, or rather these acknowledgments, apply chiefly to those of our friends who think we are not sufficiently, so to speak, aggressive. To them we say, look around; how much more strongly would you wish the Minister should have spoken?—how much lower could you hope the League would have sunk? We are not, we venture to believe, either unwatchful or inactive. Some who at first censured us as rash and overbearing, now acknowledge our moderation: while others who considered us lukewarm and irresolute, have cast aside their doubts, and own us as no unworthy comrades in the common cause. The League has overdone everything;

the country has been smothered by its tracts, and deafened by its harangues—not to say fleeced by its importunate promises. At first, people despised it, then they denounced it, then they feared it; but now they neither despise it, nor denounce it, nor fear it; they are simply tired of it—a fearful state, and one requiring the greatest skill to remedy. For our part, we only ask you to be as frank in your intercourse as you have been, as ready to receive our opinions, as kind in your interpretation of our motives. That on every little point all of us will always agree, none could expect or even desire; but we are sanguine enough—judging from the past and the present—to count upon something far better than an indolent, dead-level acquiescence; we count upon a perfect unison of principle, and a confidence in our cause, in each other, and in ourselves.

AUGUSTUS STAFFORD O'BRIEN,
Chairman of the Publication Committee.

Butter without Churning.—A farmer's wife at Hougham, Stamford, saves herself the labour of churning by the following peculiar contrivance. She ties up her cream in a linen cloth, over which she places a piece of print, and buries the whole in a damp place in the garden for twenty-four hours; she then takes it up, and turns the cream (which by this time is in the shape and consistency of a pudding) into a bowl, and by stirring it with a wooden spoon the butter quickly separates from the butter-milk, and is said to be sweeter than that produced in the ordinary way. What induced her to resort to this extraordinary method she states to be, that one of her neighbours having children troubled with sores, applied to them the ancient remedy of a salve made of buried cream; by stirring it she perceived that this produced an oil similar to butter, and she thought that, if it would do in a small quantity, it would in a larger. This is rather a more primitive system than that pursued in Chili, where they place the cream in leather bags on asses, and trot the animals about until it is changed into butter.

YORKSHIRE AGRICULTURAL SOCIETY.

This society's seventh annual meeting took place at Richmond on Tuesday and Wednesday, August 6th and 7th. Everything in the preliminary arrangements displayed judicious foresight and excellent management, and to this may be attributed, in no small degree, the encouraging results of the present meeting of the society, than which nothing could be more indicative of the high estimation in which the society is held by all classes of agriculturists, and the extent to which its important advantages are acknowledged and appreciated. The only conceivable drawback to the occasion was the rain, which fell at intervals in copious showers, both on Tuesday and Wednesday. The arrangements reflected much credit upon the indefatigable secretary of the society (Mr. M. M. Milburn), the local committee, and all other parties under whose superintendence the important re-union was conducted.

On Tuesday Dr. Robinson, of London, author of "Chemistry for the use of Agriculturists," &c., delivered a lecture on "The utility of a knowledge of chemistry to the agriculturist, as a means of saving him from the frauds practised in the adulteration of artificial manures." After some general observations, in the course of which he showed the impossibility of ascertaining, without the aid of chemistry, the genuineness of artificial manures, he explained the nature and properties of guano. He then proceeded to illustrate the manner in which the purity of this and other manures of a highly fertilizing character might be tested. The first experiments related to blue stone vitriol, or sulphate of copper, which, though not used as a fertilizer, is known to be of considerable importance to the agriculturist, in many districts being used in the sowing of grain, for the purpose of preventing its destruction by the grub. He said that some few years ago, whilst at Rochester, he was waited upon by some farmers to test something which was offered by the agent of a London drysalter as blue vitriol, at 3½d a pound, the usual price of blue vitriol being 7d. to 8d. a pound. At the first sight he could not tell whether the article was blue vitriol or not, but by applying a common chemical test, discovered that what was offered was green vitriol, or sulphate of iron. All the experiments were of the most simple character, and were performed by means of two or three common tumbler glasses.

The dinner of the council took place in the large room of the King's Head Inn. Shortly after four o'clock above 200 noblemen and gentlemen sat down to a sumptuous repast. The Earl of Zetland occupied the chair, and Sir John Johnstone the vice-chair. The usual toasts having been disposed of,

The chairman said there were two subjects, of which notice had been given, for discussion at the present meeting. The first was on the best mode of draining, but the gentleman by whom the notice was given, Mr. Jaques, was unfortunately absent; and the meeting was also deprived of the presence of Mr. Smith, of Deanston, who had gone to the meeting of the Highland Society, at Glasgow.

Mr. Lister, of Dunsay Bank, near Richmond, would willingly give his opinion on the subject which had been announced for discussion. Draining might be divided into two parts—first, the system by Mr. Elkington, and, second, that by Mr. Smith, of Deanston. To the latter system his (Mr. Lister's) observations and experience chiefly applied. His plan was to drain up the hill, that is, the drains are put in when the land, previous to draining, has been gripped, and the minor drains run up the hill. His own farm was a strong clayey soil, and his plan was to make the drains deeper than some might think necessary. He never made them less than 30 inches, but very often 3 feet, especially when the clay is strong and tenacious. As to material, he had abundance of stone, which he used in making drains. The lower three inches he filled with stones about the size of road stones; the next three inches with stones not quite so small; and the top tapers off with much smaller stones, which he puddled with clay. He began the system of puddling with clay in 1842, and it seemed to answer very well; and if he might be allowed to give a recommendation, he should advise even those who used tiles to put clay upon them. Some of his land that had been subsoiled in 1839, and subsequently drained, promised 40 bushels of wheat per acre, whilst that which was drained promised only about 20 bushels. He should not advise the feeding of sheep with turnips upon this drained land at present, but he had no doubt he should eventually be able to get good crops of turnips, and to fother upon it. The width of his drains at the bottom was 4 inches.

Mr. M. Wyvill inquired the expense of Mr. Lister's mode of draining, and the estimated improvement of the land.

Mr. Lister explained, that he had some advantage, owing to the cheapness with which he had procured the stone, and then said that the drainage had cost him about £6 per acre. As to the improvement of the land, he had not attempted any accurate calculation.

The chairman offered a few observations in favour of the system recommended by Mr. Smith, of Deanston. His only objection to Mr. Smith's mode of draining was, that he thought it better to fill up with a good soil, or any light substance, where clay was on the surface.

Mr. J. H. Charnock, of Wakefield, offered a few observations on stone draining, which, in his opinion, could not be conducted with any great certainty of success, unless there was considerable fall of land to deal with, and he said that in his opinion the tiles at present in use for drainage would be much better if they were not so large.

Mr. T. H. Parkinson, of Nottinghamshire, followed in some remarks on the system of drainage as adopted by his father, while occupying lands under Lord Scarborough. He drained to the depth of between 4 and 5 feet, which he thought desirable on account of springs of water. The system adopted by his father had answered very well, as the land in ordinary seasons would bear sheep to eat off turnips, which never could be grown before. The expense was £5 or £6 an acre—an outlay which paid the second season.

Mr. Turner observed that it had been the custom, especially if success had attended their efforts, to place too much reliance on their own judgment, and to think too lightly of the judgment of others. They constantly were in the habit of hearing persons coming forward to advocate particular systems: the Elkingtonian system had been bruited about and discussed as being the only one which was calculated to drain the country effectually. Again, they heard of Mr. Smith, or some of his disciples, stating that his plan must be followed, if they meant to have the land perfectly dry, and yet both these systems, to some extent, might be perfectly correct. There was land near Richmond that lay immediately upon a gravel subsoil. He thought that upon a gravelly, sandy, or any porous subsoil, the Elkingtonian system would succeed. Again, there was a clay land on which the Elkingtonian system would be good for nothing. But he thought he should forfeit his character as an agriculturist if he advocated these systems as being applicable to arable lands. With regard to the percolation of the water into the drain, many opinions had been expressed; but the water got into the drain at the sides; and as to the price of tiles, he felt satisfied that until the time arrived when they could be procured for less than 20s. per thousand, the general system of drainage could not be effected in this country. He dwelt particularly on the advantages of a double tile, which he recommended in preference to others, and a reason for arriving at this conclusion was his knowledge of a drain which had been formed by his father in Norfolk 40 years ago, which drain was now running as perfect as it did the first year after it was formed.

Mr. J. S. Crompton said that he had been in the habit of draining his land for at least 10 years, and he had drained with stones and tiles, as without a very good fall for a stone drain, it would prove inefficient.

Mr. Salvin, of Croxdale, Durham, said that as England must owe her future prosperity to an efficient drainage of her clay land, it was a question of great importance as to what was the best and cheapest method of drainage. The expense was such, that it was impossible for many to drain their land; and, therefore, he considered it very important to turn their attention to some means of effecting a reduction in that particular. He had, in a small way, proved to his own satisfaction that a reduction in the price of draining could be effected. He had drained 10 acres of land in the county of Durham at the rate of 40s. an acre, the drains, on an average, being from 18 to 20 feet apart, and about 24 inches deep. Seeing the position in which the poor farmers were then placed, he held that it was the duty of the landlord to assist them in draining their land, in erecting tile-sheds, and so on. The question then came as to how the draining of the land was to be carried out. He went to Kent to find this out, and he there found a gentleman who, previously to draining his land, had had a crop of about 24 bushels an acre, and after he had drained his land, he declared to him that he would refuse 40 bushels for what he (Mr. Salvin) then saw growing. From what he had seen he could prove that the tiles could be made on their own premises at the rate of 5s. a thousand, provided the fuel did not cost them more than 3s. or 4s. a ton.

Mr. Crompton said he had not been fully aware until the previous Sunday that he was engaged to give any information on the subject of liquid manure. He had, within the last 10 years, made four tanks—three on his own estate, and the fourth he had superintended upon that of his brother. The first he had made was a small one, and he would impress upon all making any hereafter, to have them constructed large enough, and adequate to the quantity of manure made on their farms in a year. The first he made contained 40 cubic yards of liquid, but he had enlarged it to 150, which was filled three times a year by the produce of his farm. He was satisfied from his experience, that this was a very simple and saving mode of management, and 30 cubic yards of the liquid manure applied to 1 acre of land would cause it to produce as heavy a crop as any other manure which could be placed upon it. With the manure which flowed into the tank on his farm he could manure 12 acres, and this land produced heavy crops of grass, which he had mowed three times, and then there was an abundance which he also mowed late in the season, and gave to his horses. He had tried the liquid manure two years ago on seeds. He had a tank in the middle of summer so full that he did not know where to put it; he, however, distributed it on grass in full meadow. The effect on the seeds was astonishing: in three weeks they were up perpendicular from the other seeds; continuing so to grow, and could not be kept down. Next year the grass was very strong also; and this was not on clayey land, so that the effect on a light soil would no doubt be more successful. Mr. Crompton concluded by some suggestion as to the improved mode of constructing the manure pump.

The chairman then proposed "Success to the Science of Agriculture," which was received with enthusiasm; and three cheers having been given for his lordship, the party separated at eight o'clock.

Exhibition of Stock and Implements.

Wednesday was the chief day for the exhibition of stock and implements, but the latter were likewise shown on Tuesday, and had been the subject of trial on two or three days previously. The scene of the show was judiciously chosen between the Gilling and Kirby Hill roads, where three spacious fields were occupied. The number of visitors to the show-fields, especially on Wednesday, was immense. The implements embraced almost every conceivable variety, and several new inventions, strikingly indicative of advancing mechanical skill and agricultural enterprise. With respect to the stock, the horses were more numerous, and as a whole greatly superior in quality to the show last year; in cattle also, though not quite so extensive as the Doncaster exhibition, there was a manifest superiority in quality; to which we may add a very excellent show of Leicester sheep and pigs; and if we take into consideration the situation of Richmond, we think that altogether the show of both stock and implements was not inferior even to its splendid predecessor at Doncaster.

The following are the names of the judges who officiated on this occasion:—

, Parkinson, Babworth; A. Maynard, Esq., Marton-le-Moor; and
, Riby, near Caistor.
—P. Skipworth, Esq., Aylesbury; W. Tindall, Esq., Wheatley;
artin.
herell, Esq., Durham; S. Harrison, Esq., Everton; and F.

Esq., Melton; W. Henlock, Esq., Ouseburn; and J. Kil-

Esq., London; J. Firth, Esq., Westminster; and J.

s follows:—

SHORT-HORNED CATTLE.

e, £25—T. Bates, Kirkleavington, Yarm. Second, £10, W. Raine,
mouth, Darlington.

ung bull, £20—T. Lax, Ravensworth, Richmond. Second, £10, J. B. Stan-
pe, Revesby, near Horncastle.

Bull calf, £10—T. Bell, Kirkleavington, Yarm. Second, £5, G. D. Trotter, Bishop Middleham, bred by him.

Cow of any age, in calf or milk, £20—T. Crofton, Holywell, Durham. Second, £10, R. Booth, Warlaby, Northallerton.

Three-year old cow, in calf or milk, and having had a calf, £15—J. Booth, Killerby, Catterick. Second, £5, T. Bates, Kirkleavington, Yarm.

Two-year old heifer, in calf, £10—J. Booth, Killerby, Catterick. Second, £5, T. Lax, Ravensworth, Richmond.

Yearling heifer, £10—T. Charge, Barton, Richmond. Second, £5, R. Booth, Warlaby, Northallerton, bred by him.

Heifer calf, £10—J. Booth, Killerby, Catterick. Second, £5, T. Crofton, Holywell, Durham.

CATTLE OF ANY BREED.

Fat ox, under 3 years of age, £10—H. R. Glaister, Bedale.

Fat cow or heifer, of any age, £10—C. Watson, Ovington.

LONG-WOOLLED SHEEP.

Shearling ram, £15—P. Richardson, Horkstow, Barton, bred from his own flock. Second, £7, R. Dawson, Sewerby Field, Burlington.

Ram of any age, £10—S. Wiley, Brandsby, York, 4 years old, bred from the flocks of Messrs. Buckley and Stone. Second, £5, R. Parkinson, Badworth, 3 years old, bred from the flock of Mr. Lythall.

Pen of five ewes, £10—H. Mann, Pigburn, Doncaster, 2, 3, and 4 years old, bred from his own flock. Second, £5, W. Abraham, Harnetby-le-Wold, Brigg, 3 to 4 years old, bred from the flocks of Messrs. Dixon and Taylor.

Pen of five shearling wethers, £10—W. Jordan, Speeton, Burlington, bred from the flock of Mr. Smith. Second, £5, S. W. Duggleby, Beswick, Beverley, bred from the flock of J. Hall.

Pen of five shearling gimmers, £10—Outhwaite, East Appleton, bred from his own flock and Mr. Wright's. Second, £5, R. Outhwaite.

PIGS.

Boar, large breed, £5—J. W. Nutt, York. Second, £2, J. Relton, Oldstead.

Sow, large breed, in pig or milk, £5—J. Higginson, Thirsk. Second, £2, T. Lister, Coverham Abbey, Middleham.

Boar, small breed, £5—Earl of Zetland, Aske, Richmond. Second, £2, L. Severs, Oliver, Richmond.

Sow, small breed, in pig or milk, £5—S. Wiley, Brandsby, York. Second, £2, C. G. Smith, Everton, Bawtry.

Three store pigs, of the same litter, from 4 to 9 months old, £5—Lord Wenlock. Second, £2, J. W. Rutt, York.

HORSES.

Stallion for hunters, £10—R. Nicholson, Beeford, Driffield. Second, £5, J. Foxton, Waithwith, Richmond.

Stallion for coach horses, £10—R. Rotsey, Market Weighton. Second, £5, T. Moss, Greta Bridge.

Stallion for roadsters, £10—W. Dobson, Bishop Auckland. Second, £5, T. Cockshott, Addingham-moor-side, Otley.

Stallion for agricultural purposes, £10—G. Russell, Kellington, Ferrybridge. Second, £5, J. Nightingale, Barmpton.

Mare and foal for hunting, £5—W. Dale, Manor House, Catterick. Second, £2, C. Meynell, Scorton, Catterick.

Mare and foal for coaching, £5—R. Mears, Beaumonthill, Darlington. Second, £2, T. Wilkinson, Dandy Grange, Northallerton.

Roadster mare and foal, £5—J. Booth, Killerby, Catterick. Second, £2, W. Lythe, Thirsk.

Three-year old hunting gelding or filly, £5—A. Maynard, Burdon, Darlington. Second, £2, A. Maynard.

Three-year old coaching gelding or filly, £5—C. Watson, Ovington. Second, 2*l.*, C. Watson.

Two-year old coaching gelding or filly, 5*l.*—T. Manfield, Thirkleby Bridge, Thirsk. Second, 2*l.*, T. Manfield.

Three-year old hackney gelding or filly, 5*l.*—T. Dickinson, Bishop Wilton, Pocklington. Second, 2*l.*, T. Robinson, Barton, Richmond.

Three-year old gelding or filly for agricultural purposes, 5*l.*—G. Trotter, Barton, Richmond.

HORNED CATTLE.

Hard ram, 5*l.*—J. Martin, Hope, Greta Bridge. Second, 2*l.*, J. Hutchinson, Helwith, Richmond.

Pen of five four-year old hard wethers, 5*l.*—J. Hutchinson.

Pen of five hard ewes, 5*l.*—J. Hutchinson.

EXTRA STOCK.

CATTLE.—First prize medal to J. Booth, Killerby, Catterick, for his roan cow, Bracelet. Second prize medal to Mr. Booth, for his cow Necklace, a twin sister to the above.

SHEEP.—First medal to R. Dawson, Sewerby Field, Burlington, a 5-year old ram, bred from the flock of Mr. Burgess. Second medal to John Carter, Scales, Richmond, 10 Leicester rams.

PIGS.—First medal to J. Higginson, Thirsk, for a sow in pig, small breed, 3½ years old. Second medal to S. Wiley, Brandsby, York, for a gilt of the small breed, 11 months old, bred by him.

HORSES.—First medal to R. M. Jaques, Easby Abbey, Richmond, for a cart mare, 10 years old. Second medal to G. Holmes, Thirsk, for a bay yearling coaching colt, by Rufus, d. by Quintessence.

DRAIN TILES.

For the best specimen of draining tile, the expense of making to be taken into consideration, as well as the implements used in, and the mode of manufacture, 10*l.*, J. W. Etheridge, Furnival's Inn, London.

CHEESE.

For the best cwt. of new milk cheese, made within 30 miles of Richmond, 5*l.*, Ann Dent, Caldwell, Richmond.

FARMS, &c.

Premium of 10*l.* for the best account of experiments made with guano as compared with other manures, to different crops—Mr. M. M. Milburn, of Thorp Field, near Thirsk, the secretary of the society.

Premium of 10*l.*, added to a sweepstakes of 5*l.* each, from occupiers, being members of the society, for the best cultivated farm, not less in extent than 100 acres, situate in Yorkshire, and within 30 miles of Richmond—Messrs. Outhwaite, of Bainesse, near Catterick. The stake of the second best cultivator, according to the terms of competition, was returned to Mr. W. Heddon, of Howfield, near Ripon.

IMPLEMENTS.

The trial of implements being incomplete, only a portion of the prizes were awarded, which were as follows :—

1*l*. to J. Teasdale, Burniston, Bedale, for two-row turnip drill for rough manure.

1*l*. to ditto for corn and manure drill.

1*l*. to T. Bigg, Crawford Street, London, for sheep-dipping apparatus.

The society's medal to Barnett, Exall and Andrews, Reading, for hand-threshing machine, inv. W. Exall, mk. Barnett and Co., new invention.

1*l*. to ditto for chaff-cutter.

1*l*. to J. Scurrah, Crakehall, Bedale, for horse-hoe.

1*l*. to A. Dean, Birmingham, for horse-engine.

1*l*. to J. H. Charnock, Wakefield, for drain-tile machine, inv. J. B. Denton, mk. Bradley and Craven.

The society's medal to W. Croskill, Beverley, for 5 ft. 6 in. improved patent clod-crusher.

1*l*. to J. Green, Doncaster, for portable weighing-machine.

10s. to J. Barker, Dunnington, near York, for two-pair potato harrows, and four improved iron sack-barrows.

The society's medals to R. Clyburn, Uley, Dursley, for winnowing machines, inv. G. Parson and R. Clyburn, mk. R. Clyburn, new; and for chaff-cutting machine, inv. Earl Ducie, R. Clyburn, and E. Budding, mk. R. Clyburn.

1*l*. to ditto, for corn-crusher.

1*l*. to ditto, for spanner, or screw-wrench.

10s. to F. King, Northallerton, for cattle feet clippers, inv. G. Meynill, Northallerton, mk. G. Meynill.

The society's gold medal was awarded to W. Crosskill, of Beverley, for the best assortment of implements in the yard.

THE DINNER IN THE PAVILION.

The great dinner of the society was held at three o'clock in the afternoon, in a temporary pavilion erected for the purpose in the Castle Yard. Mr. Norman, of Richmond, was the gentleman to whom had been entrusted the erection of the edifice. It was constructed to accommodate 550 persons. The dinner was prepared on a most extensive scale by Mr. Hill, of the King's Head, Richmond, assisted by Mr. Johnson, *chef de cuisine* of the Black Swan Inn, York. The Earl of Zetland presided, and was assisted in conducting the business of the evening by Lord Feversham (vice-chairman) and a number of stewards. Every seat was occupied, and many gentlemen were unable to gain admission.

PROGRESS OF AGRICULTURAL SCIENCE.

By Mr. TOWERS, Mem. Roy. Agri. Society, &c.

Those readers who possess the back numbers, and can refer to No. 27, October, 1843, will perceive the notice that was taken of a *Report of an Example Farm and Agricultural College*, and of the plan contemplated by several influential noblemen and gentlemen.

Some doubts were expressed of the future progress of a work which it had been a chief object with me to urge on the attention of every patriotic agriculturist; but those doubts are now removed. The first announcement was made in July, 1843, and a year of suspense passed, without any definite assurance. At length a meeting was held at Southampton, during the late exhibition, for the purpose of "*establishing an agricultural college;*" and from a paper of July 27th last, the following particulars are extracted:—

"A public meeting was held in Freemason's Hall, at two o'clock. The chair was taken by Mr. Pusey, who briefly stated the object of the meeting, and pointed out the advantages that would accrue to the agriculturists from the establishing such a college. The project had been taken up by many of the leading agriculturists, not only in the immediate district in which it was intended to establish the college, but in other and distant counties. Lord Bathurst had, in addition to providing a suitable farm of 400 acres, on which the college and other buildings were to be erected, advanced £2000 in the furtherance of the object.

"The Duke of Richmond, in proposing the first resolution, said that he appeared before them, not as a member of the Royal Agricultural Association, for the rules of that society precluded the members from interfering in anything but the immediate object for which they periodically met, but he stood before them as a country gentleman, anxious to promote an object so laudable, so beneficial to the agriculturists of the kingdom. He had great pleasure in proposing the first resolution, which was seconded by Dr. Playfair:—

"That schools of agriculture are much wanted in this country, in which a knowledge of the sciences now admitted to be essential to the successful pursuit of agriculture may be learned, in connection with the practical working of a farm on the most approved principle.

"Mr. Escourt proposed the second resolution. The object of the meeting had his most cordial support, and he moved the resolution:—

"That the plan for the establishment of an agricultural college near Cirencester, explained by the deputies attending this meeting, is calculated to effect this desirable object.

"The next resolution was to have been proposed by Lord Spencer, but in the absence of that nobleman Dr. Buckland proposed, and Mr. Eyle seconded it:—

"That this meeting warmly recommends the agricultural community to give every support and encouragement to the establishment of this college; which they regard as the first step in the right direction, for training up the rising generation of farmers upon a sound foundation; and they would especially urge on farmers generally the importance of securing to their children intended for the same occupation, the great advantages to be derived from the kind of education provided by such an institution.

"Mr. Pusey congratulated the meeting upon the object they had in contemplation being fully carried out."

This is the substance of the facts as they now stand, and we may hope, that an undertaking so announced and supported will be carried through without delay or impediment.

One chief obstacle appears to have been overcome; for, by the munificent arrangement of Lord Bathurst, a farm, it should appear, has been provided; and thus the difficulty of purchase is obviated. In the plan first proposed, it was stated that a capital of £12,000 would be required, which it was intended should be raised by 400 proprietary shares; the farm to comprise 400 to 600 acres. The locality of Cirencester was preferred on account of its central situation, its market, and railway communication. So far it will not be difficult to agree with the projectors; but whoever is at all acquainted with the variations of soil, climate, and adaptation of crop, will at once perceive that this one college can only be considered as a first step. An important one, to be sure, it is; because, by the experience acquired during its early management, the deficiencies and requisites will be ascertained. Therefore, we trust that there may be no relaxation of energy in bringing the proposed measure to its speediest completion; for the agricultural body may rest assured, that nothing but science, a scientific education of youth, a conformity to the onward spirit of the times, can ever establish agriculture in a position to compete with the commercial exigencies of the community.

There are many improvements in a state of progress, not one of which the farmer, educated in the old routine practice, can properly investigate or apply. We have now artificial manures in superabundance, all products of chemical science. The great natural manure, *guano*, is imported to an extent that could not have been anticipated! What is guano? What its varieties? To what extent is it adulterated by parties whose sole aim is *gain?* These are questions which it would not enter into the mind of the farmer to conceive; they belong to pure chemistry, and to that science everyone must appeal for correct answers.

But how is chemistry to be rendered available in, and to, practical agriculture? Davy made the attempt, but he had no farm; the laboratory of the Royal Institution was adequate to the analysis of collected products, and to a few ounces of the soil from which they were obtained, but *there* its efficiency ceased. The same may be said of Liebig and his scientific announcements: therefore we arrive at the inevitable conclusion, that chemistry will be of little avail to agriculture unless it be appealed to (upon the farm) by a regular professor, and a set of students or pupils who are trained to the knowledge of its agencies, and their applicability to the processes of cultivation. Chemistry, as a science, must be believed in, and respected: hitherto it has been doubted, and reviled.

At page 376, October, 1843, and rule No. 3, it was stated that "*A head master will be selected who has a sufficient knowledge of chemistry and geology;* two of the *more important sciences,*" &c., &c. Some notice was before taken of this part of rule 3; and now I may add, that the projectors of the college scheme did not appear sufficiently impressed with the importance of chemistry. They are not, indeed, scientific persons, but country gentlemen, enjoying all the luxuries of life, the pleasures of beautiful scenery, and the apparent advantages of game preserves. It it perhaps more than we had reason to hope, to see such persons stepping forward, and contemplating the advantages to be derived from the institution of an agricultural college. But when we read of the appointment of a *head master* who may have *a sufficient knowledge of chemistry*, it will not be irrelevant to enquire—What constitutes that *sufficiency?*

Let us select the farm near Cirencester, as the model, and ask, first, what is the general character of its soil, or rather how many varieties of soil are to be found upon it? There are few localities in which a field of 20 acres does not offer nearly as many modifications on its surface, to say nothing of subsoils. A professor ought therefore to be familiarly acquainted with every one of the components of such modifications; he should be able at once to detect the sand, the alumine, the chalk, the iron, and other metallic oxides, and all decomposable constituents. If he could do this neatly, and produce corresponding results from three distinct trials, he might safely be pronounced an acute and competent analyst. But here his labours would be only beginning; for to render this knowledge in any degree useful to agriculture, the great truth taught and impressed by Liebig, must ever be brought into active operation by the most rigid investigation of all the plants grown upon the farm, in its ever interchangeable rotations.

By these comparative and reciprocating analyses, and by no other means, will any one be competent to determine the manures which ought to be added to earths of different qualities, and for plants of different families.

The *ashes* of plants contain all the fixed earths and salts which either were in them (of this common salt is one) during growth, or had been developed by the action of fire. A competent professor would be prepared to determine the nature of these salts, and to decide with sufficient accuracy whether or not, or in what form, they had existed in the plant during life. Thus, in the instance of *potash*, by a knowledge of the components of the juices prior to incineration, he would exhibit proof that the alkali found in the residuary ashes had been previously combined with some organic acid, in the form of a neutral or acid salt. In the vine, potash is united with the tartaric acid in the condition of a *bi*-tartarate, (instance, *argol* or *cream of tartar)*, and in wood sorrel as a binoxalate *(salt of sorrel)*. And of these combinations—all of them the products of vital chemistry—it would be easy to point out the importance, not only as refers to medical and economical purposes, but also to agriculture, as an index of the practice which ought to be adopted in order to bring the several crops to the highest perfection.

Manures of every description are proper subjects of chemical investigation; those of the mixen or dunghil have already been freely examined, and the products reported; but we have now upwards of thirty new and artificial composts, all of which are much vaunted. Next to the true guano, which, being produced by sea-fowl, ought to contain a great proportion of *phosphates*, there is a manure now sold which perhaps is the best of the new preparations; it contains of—

	Parts.
Bone-dust, so called, about	4
Carbonate of lime, about	1
Some salt of ammonia, about	1

The bone-dust contains phosphate of lime, and some carbonate of lime. The carbonate employed is chalk reduced to powder.

The salt of ammonia may be either the muriate—that is, common sal ammoniac—or the sulphate, a product of the gas liquor, neutralized by sulphuric acid, and therefore very cheap.

Sulphate of ammonia is coming much into vogue, and its notoriety is not diminished by the announcement of Mr. Campbell's steeping salts, which caused a lively sensation at the last Dundee exhibition, 1843.

Now all the salts with earthy or alkaline bases ought to be rigidly examined at the new institution, and particularly the foreign guanos, many of which, it is said, are so degraded by adulteration, as scarcely to contain one-fifth part of the genuine material. This is a circumstance to be deplored upon every account; but it furnishes another potent argument for the institution of agricultural colleges, and even dépôts, wherein substances of so much consequence to the farm may not only be proved, but furnished to the grower, with proper directions for their application. The *abuse* of guano is also a consideration of no little moment, inasmuch as, varying in strength and quality, it requires to be reduced, and regulated accordingly. Guano, like the bone compost just described, by its injudicious application in a pure state would act destructively. From a knowledge of this fact, certain dealers, possessed of accommodating consciences, have so tempered the guano of commerce as to render it perfectly effete and worthless.

The allusion to new manures naturally leads to the consideration of those preparatory applications which were particularly noticed in a former article, as the invention of Mr. James Campbell, of Dundee. The nitrogenized salts—namely, the sulphate of ammonia, the nitrate of potassa and soda, formed the bases of these preparations; the first appearing to have proved most effectual in the production of those very luxuriant oats which were exhibited.

It must be remembered that the specimens were grown in boxes, and so far, not in a way corresponding with field cultivation. But numbers of experiments have since been attempted in the North, of which the results have not yet been communicated.

Here, having received some boxes of materials, I was enabled to place a sufficient quantity of the preparation for barley in the hands of three farmers, to enable them each to sow an acre, side by side with other seeds of barley *not prepared*. Mr. Campbell's printed directions were communicated, and followed, and the results to a certain extent are now ascertainable.

As the articles did not come to hand till April, it was impossible to make any use of those designed for *spring wheat*, or oats; because the seed season of both was past. And as respects the barley, the dry weather set in in Berkshire on the 25th of March, and continued till the 1st of July, with the exception of about three hours of rain on the 12th of April, and the 25th of June.

In the first experiment 2½ and 3 bushels of seed per acre, steeped from 48 to 60 hours, were sown, against parallel lands, of 4 bushels per acre, unsteeped, and both vegetated equally. I investigated these lands, attended by the man who sowed the seeds, and agreed with him, that little or no difference could be discerned. This was during the first week of August, and the barley was then nearly ripe; but the soil was so very indifferent, so near the gravel in many places, that the whole breadth was equally patchy. In fact, a large piece of land was chosen, which at the best of times requires frequent rain; and upon this none had fallen during the growth of the barley. All that can be said is this: that, so far as the plants have been enabled to tiller, the seed saved by the quantity abated in the steeped portions is economized. In every other respect the trial has been defeated by the weather, and large portions are wretchedly impoverished by the burning gravel.

No. 2 is in a still worse predicament. Three-fourths of seed, steeped or unsteeped, could not vegetate at all on ground rendered a mass of clods by the burning sun of April, but the few plants which could grow have tillered well, and the lands, or breadths sown with steeped seeds are as thick on the ground as those produced from seed unprepared.

No. 3 may be cited as furnishing a fair criterion trial; the ground being moist, and working pretty well. The steeped seeds amounted to 2½ bushels per acre; the unsteeped, contiguous to the first, were sown 4 bushels to the acre, on the day following. Both vegetated well, and the result cannot be questionable. A line of demarcation drawn between the two breadths could not more accurately define the site of each. Both sets were in full ear, and near turning off, when I saw them, in company with the farmer, at the beginning of August. I knew nothing of the situation, but followed him, till the question was put to me—"Do you see any difference?" The plants from steeped seeds had tillered so as to equalize the crops, but their verdure was greatly more intense, and in height they exceeded by three or four inches. The ears were generally very fine, full, and weighty, and many were observed with 15 to 18 seeds in a rank. Of this trial, so far, I can speak unequivocally, and if in other and more extensive trials, where rain came in due season, the success has been equally great, there can be no hesitation to assert, that all the seed saved (1½ bushel per acre) has been so much gained; and thus far the discovery must be deemed a real boon.

Here we are constrained to stop; for one trial cannot be conclusive, and we must be content to wait for farther evidence from the North, and also for experiments during the next autumnal wheat season.

It is manifest from all that has been advanced, that a professor of a college must attentively observe the progress of trials with chemical steeps; one of the best of which, I think, is common saltpetre *(nitrate of potassa)*; but, as I have proved that the quality and exposure of the land exert much influence upon the growth, it will be equally apparent that no one locality can bring either the question of steeping, or any other enquiry, to a determinate issue. Educational institutions, to prove a national benefit, must be extended, so as to embrace every part of the United Kingdoms.

We require an educated youth, a new and rising generation of emulous and spirited young men, instructed in true theoretic and practical principles, whose hands and eyes shall be everywhere. It is so already in the arts, why should agriculture—the glory and sinew of the land—be content to lag behind?

The processes and results of "dibbling" ought also to be more scrupulously observed. I have been engaged in an experiment this year which has to me been decisive; but I cannot report the particulars in the present communication. An article, however, has met my eye which must be laid before the readers of the British Farmer's Magazine, because the season for wheat sowing will be approaching soon after the publication of the October number. I give it verbatim. It is a letter from a nursery-man, at Horsham, who signs himself F. Allman—per date July 23, 1844:—

"*Experiment on the Growth of Wheat.*—Having received a small quantity of wheat of a very superior quality from a gentleman recently returned from Australia, I prepared a small piece of ground which had produced a crop of potatoes in 1842, and in November of that year I *dibbled* in 682 corns, putting only one grain in each hole, planting it in rows 9 inches apart, and 6 inches from hole to hole; the ground measured 34 yards, or the 1-142nd part of an acre; the grains weighed 18 drachms, which would amount to little less than 10 lbs. to the acre, so that a bushel of wheat would plant rather more than 6 acres. The usual quantity sown in this neighbourhood varies from 18 to 20 gallons per acre. The wheat was put in without any manure after the potatoes, and no kind of top-dressing or manure of any description was put upon the land during the whole time of its growth. The season of planting being rather late, and the weather a little unfavourable, the plants looked weakly through the winter, and compared with that growing in the adjacent fields, and cultivated in the usual way, the appearance was unpromising; but as soon as the weather became more genial, and the spring advanced, it began to branch out from the root in a very remarkable manner, producing, in many instances, from 18 to 25 luxuriant and healthy stems, and in one case to upwards of 40, and the ground was nearly as much covered as that sown broad-cast. On the 6th of April I had the ground carefully measured, and upon counting the plants found that 33 or above one in twenty had not vegetated, or that they had perished during the winter; this reduced the number to 649; these continued to flourish, came into ear in good time, and ripened quite as soon as any wheat in the neighbourhood.

"The produce on the 34 yards was a little more than 4 gallons, exclusive of several of the finest plants which I took up with the roots, for the purpose of showing to persons interested in agricultural improvements; one of these, presented to C. S. Dickens, Esq., of Coolhurst, and exhibited by him at the *conversazione* of the Marquis of Northampton to the Fellows of the Royal Society, had 42 ears, all from a single grain. The wheat was of the most excellent quality, and the straw, which stood remarkably well, weighed 72 lbs., or at the rate of 280 trusses to the acre. Taking the 34 yards as the 142nd part of an acre, the produce multiplied by 142 would amount to 71 bushels per acre. Judging from what I have seen of this wheat, I think it possesses an astonishing power of branching, and is peculiarly adapted for cultivation in the manner described above.

"I have this year about an acre of the same wheat, planted in precisely the same manner, and believe it to be a new and most excellent variety, and intend to dispose of the same for the next year, and after harvest to publish a farther account of the experiment, and to advertise for sale."

Taking the accuracy of the above recital for granted, the result is at the rate of nearly 8 quarters per acre, double the ordinary acreable produce of wheat. My experiment warrants, and in a great degree justifies this calculation; for, as an approximation, I now estimate the produce of one row of 8 yards, containing 38 plants from so many single seeds, at 342 ears, each comprising, on an average, 50 germs, or 17,000 grains. But as a full account will hereafter be given, I only observe, that by dibbling, under favourable circumstances, the increase will be enormous, and the practice would give employment to the labourer.

One other allusion remains to be made, and that is to the Letters on Agricultural Improvements which now and then appear in the Mark Lane Express. They are from the pen of that able and philanthropic writer, Mr. Mechi, who has devoted, and is applying large funds to the genuine improvement of agriculture. In the last letter, July 8, he observes—"Our Royal Agricultural Society, to which every landowner and farmer should belong, has already effected vast good. They should have *extensive model farms*, with schools and libraries attached. *There* should be shown, after patient investigation, the most perfect and certain modes of *drainage*, *irrigation*, and *warping*; the most complete, durable, and economical arrangement of *buildings*; the most advantageous mode of tilling, and *course of crops*; the greatest economy of *manure* and *labour*; the *minimum* of *seed*, and *maximum* of distance in sowing; the most advantageous stage of ripeness; the effect of *steeping seeds* in manures; the most profitable mode of housing and feeding stock; and the advantages of *removing all trees and fenees. Let us grow corn, instead of timber, fences, and rubbish.*"

Every one of these items are worthy of attention; and it is the object of the writer to urge the necessity of a thorough investigation of them, and then to draw up a *code* of unerring rules, and to enforce it with the full weight and sanction of the society.

As to the last consideration—the substitution of corn for timber—they who live in a country abounding with timber, hedge-rows, and broad fences, must be aware of the extensive ravages produced by game, as well as small birds. Timber, except in masses and forests, is an absolute nuisance. Whole acres are, near me, destroyed by the rapacity of pheasants, hares, and rabbits. It is pitiable to witness the destruction so effected; to say nothing of the utter loss of land to the farmer.

If gentlemen must have woodland and preserves, let them keep them to themselves, and farm the land in their immediate proximity. Experience will then teach how cruel it is to let farms at high terms to tenants, with restrictive clauses, the corn crops of which are annually exposed to vermin, which may not be approached or touched by those upon whom they inflict most heavy losses.

J. Towers.

ISLE OF MAN AGRICULTURAL SOCIETY.

The fourth annual meeting of the Isle of Man Agricultural Society was held at Peel, on Thursday, the 8th of August. The weather unfortunately was unfavourable, there being a strong south-west wind, accompanied by heavy showers of rain. This state of the weather deterred many parties from attending who otherwise would have been there. Another cause which also operated in diminishing the company, was the circumstance of the Royal Scottish Society's meeting being held at Glasgow on the same day. The attendance was therefore less than on former occasions, but it is thus accounted for.

The exhibition was held on the Lake, a piece of ground adjoining the upper part of the harbour, belonging to Mr. Cæsar Corris, who kindly granted it for the use of the Society, for which purpose it is admirably suited, being a somewhat irregular parallelogram.

The cattle and horses were ranged in stalls under the centre booth, and the sheep, pigs, extra stock, and husbandry implements round the upper side and lower end of the yard. The plan adopted by the stewards in the arrangement of the stock enabled visitors to inspect the animals to considerable advantage. Amongst the cattle there were some fine animals, which, for size, symmetry, and condition, would have done credit to any show in England or Scotland. But in reference to the general character of the stock we refer our readers to the speeches delivered by the judges at the dinner.

The awards were made in the forenoon, and the yard was opened to the public about noon, and from that time till four o'clock the attendance was as good as the circumstances alluded to would permit. We noticed many gentlemen from different parts of the island, and several of the insular clergy. The Lord Bishop of the Diocese was in the yard for some time in the afternoon.

The Dinner.

At four o'clock the company began to leave the yard, and assemble at Peel Castle Hotel, as the hour of dinner approached. The dinner was provided by Mr. Frizelle, and was in his usual excellent and abundant style. No room in the hotel being sufficiently capacious, a large room in the stable-yard opposite was appropriated for the purpose, for which it is admirably adapted, being some seventy or eighty feet in length. A table was placed nearly the whole length of the room, with a cross table at the head for the chairman and the officers and friends of the society. Covers were laid for about a hundred, and at half-past five between seventy and eighty sat down to dinner, under the able presidency of E. M. Gawne, Esq., of Kentraugh, the President of the Isle of Man Agricultural Society, ably aided by R. Harrison, Esq., High-Bailiff of Peel, as vice-chairman.

The Awards of the Judges.

CLASS 1.

Mr. Edward Faulder, £5 for the best short-horned bull. Second best ditto, E. M. Gawne, Esq., £3.

Alexander Spittal, Esq., best short-horn bull, not exceeding two years, £2. Second best ditto, Mr. Edward Faulder, £1.

Mr. W. B. Jefferson, best short-horn cow, in calf or milk, £3. Second best ditto, ditto, 30s.

E. M. Gawne, Esq., best three-year old heifer, in calf or milk, £2. Second best ditto, Alexander Spittal, Esq., £1.

Mr. Edward Faulder, best short-horn heifer, two and under three years old, 30s. Second best ditto, Mr. W. B. Jefferson, £1.

Mr. Faulder, best short-horn heifer, one and under two years old, 30s. Second best ditto, Mr. W. B. Jefferson.

CLASS 2.

E. M. Gawne, Esq., best bull of any other breed, £3.

R. Quirk, best cow of any other breed (Ayrshire), £2. Second best ditto (a cross), Alexander Spittal, Esq., £1.

CLASS 3.

Mr. T. Jefferson, best brood mare, £2 10s.

Mr. G. Quayle, best three-year old colt, £1.

CLASS 4.

Alexander Spittal, Esq., best Leicester ram, £2. Second best ditto, Mr. E. Faulder, £1.

Mr. E. Faulder, best Leicester ewes, 30s.; second best ditto, 20s.

CLASS 5.

Mr. J. Blyth, best Cheviot ewes, 30s.; second best ditto, 20s.

CLASS 6.

Mr. J. Corlett, jun., best Manx mountain ram, 20s. Second best ditto, Mr. T. Corrin, 10s.

Alexander Spittal, Esq., best Manx ewes, 10s.

CLASS 7.

E. M. Gawne, Esq., best ram of any other breed, £2.

Alexander Spittal, Esq., best ewes, 30s.

CLASS 8.

E. M. Gawne, Esq., best and second best boars, of any breed, £3.

CLASS 10.

Mr. Edward Faulder, for the best yearling heifer of any breed, (cross-breed excepted,) bred and fed by the exhibitor in the Isle of Man, and shown at the Agricultural Meeting of 1844. £5, presented by James Aspinall, Esq., of Liverpool.

EXTRA STOCK.

Alexander Spittal, Esq., best Highland cow, 20s.

Mr. J. Richardson, an entire mountain pony of merit, 30s.

Mr. J. Mylchreest, a cross-bred heifer, three years old, 10s.

From the speeches made at the dinner we select the following, by which our readers will learn the condition of the society and the state of agriculture in the island.

After some preliminary observations Mr. Rogers observed—After this society had made four annual exhibitions, it would be a crying shame to allow it to fall to the ground for want of support. He was not egotistical; but the meeting had been called upon by the chairman and treasurer to renewed exertions, so that the society might be enabled to continue and extend its beneficial influences through all classes of the agricultural community, and he hoped they would respond to those calls. It was true that men of wealth came forward, and nobly supported its funds; but that was not all—they wanted the support of the small farmers—the shillings and the half-crowns of the lower orders, as well as the five pounds and the ten pounds of the more wealthy. He must confess, that if this state of things could once be accomplished, he should not feel so acutely for his friend the treasurer as he had that morning; for he could not help but feel for him—his countenance expressed unutterable things, whilst it was predicted that we should have a rainy and disagreeable day for the exhibition. His esteemed friend, Mr. Vice-president Spittal, had last year offered £5 to enable the society to award prizes for green crops; but even with that handsome donation for the purpose, they were unable to do so. He hoped his friends around him would not imitate the example of Judas Iscariot. It was the duty of every man to encourage the society, and he trusted yet to see its funds in a more flourishing condition than ever; and this could easily be accomplished, by every man coming forward next year, and giving something towards it. He was not going to make apologies; he detested apologies; but he must claim the indulgence of the society, whilst he reverted to passing political events—he meant the late fiscal alterations in the trade of this island, whereby the farmer might import the most approved breeds of cattle, the most modern implements, the best manures and seeds, and all these, too, free of duty and all other contingent expenses. He trusted, therefore, under these circumstances, that the country would rise in prosperity and wealth, and that this society might diffuse its blessings and advantages to every parish and farm throughout the island.

On "The Judges of the Show and Stewards of the Yard" being given,

Mr. Statter, one of the judges, rose to reply. He did so at the request of his colleagues. They were glad to co-operate with the Isle of

Man Agricultural Association; to give them satisfaction was their desire, and if they had succeeded in doing so, that was their fullest reward. He had been much gratified with the cattle show. He had seen animals there which would grace the Society of the island, and which would not disgrace that of any other place, even the Royal Agricultural Society itself. If the agriculturists of the island will avail themselves of the privileges now placed within their reach, and by the use of good animals in judicious crossing, and other means designed to help them, they will soon realise profits they never knew before. He should have been glad to have said as much in favour of the horses; but he could not—they were bad. Considering the facilities of the island, they ought to have good horses, both for farming and general purposes. If they encouraged the breeding of cob horses, they would find them good, and very suitable for the island. They ought to get up a subscription for the purpose. The sheep, he was happy to see, were good, especially the Leicesters and Cheviots which had been exhibited. He was sorry to see the native sheep still encouraged, and hoped they would soon give way to the larger kind. Many of the latter were very hardy, and would feed on the same mountain pasture as the native sheep. A judicious cross might be made with the Cheviot and their own. He regretted to see so few implements at the show, and hoped that by the next annual meeting they would be able to persuade some makers in the neighbouring countries to send specimens over: they would do a deal of good. Having seen some good cattle, he would now remark on the agriculture of the island, as they could not continue to feed good and fine cattle without good pasture. The cultivation is but indifferent, and a subscription should be got up to promote its general improvement. They would then see their green crops in a state such as they had never before seen them, and by feeding their cattle with green crop in the house, they would leave a great breadth of land for tillage.

Mr. Binns rose and said, after the explanation and observations of his friend Mr. Statter, he had nothing particular to say. After being invited by the honorary secretary of the society he felt pleasure in the reflection that he was coming amongst friends, whose kindness on a former occasion had made a deep impression on his heart; and although he expected some tossing in crossing the water, he was contented to suffer that unpleasantness, in the hope that he should be enabled to contribute to the prosperity of this country, by being present at, and encouraging its annual agricultural exhibition. Agriculture was one of those arts that contributed to the wealth and prosperity of every nation, where successfully followed out; but he regretted to say, that he could not boast of its improved state in the Isle of Man, not having yet seen it. One of the vice-presidents (Mr. Wood) had alluded to the injurious effects of the *cushag*, and he recommended his friends—if too idle to cut or root them up—to turn their sheep into such fields as were overrun with this weed, as it would be the cheapest and easiest method of keeping it under. As his friends and himself were coming along to this town, some observations were made as to the desirableness of crossing the small sheep of this island with the Cheviot or Southdown rams: these Cheviots and Southdowns would thrive on the same lands as supported the common Manx sheep. In the justness of their observations he fully concurred. He regretted to see so much room occupied by the fences in the island; the sides of the fences in the fields seemed to be a nursery for weeds only. He felt assured thorns would thrive well in this country, and if planted low and thick, they would shelter each other, and make a good fence in a few years, if kept low and well clipped. Planting was very deficient: timber of all kinds could not fail to thrive; it would shelter the farm, and enable the farmer to rear a finer race of cattle at less cost and trouble. Drills ought to be more generally used in farming—they keep the land cleaner and in better condition. Draining was much wanted in many parts of the island, and tiles were now made at 5s. per 1000, in place of 25s., as heretofore. He hoped to see all the modern improvements in agriculture adopted here, and, in conclusion, begged to thank the gentlemen present, for the very handsome manner in which they had drank the health of the judges of the show.

The chairman would next propose "The Royal English Agricultural Association, the Highland Society, and the Irish Agricultural Society." Being a member of the Royal English Agricultural Society, he had gone to Southampton to the annual meeting of that society, to buy stock. He thought his own bull a good one, and was rather disappointed that he had not got the prize to-day. He was also much pleased, for he was not aware that there was a bull better than his own on the island. He had not seen Mr. Faulder's bull since the Castletown meeting, and thought his own the best. He had been agreeably disappointed. He was glad that Mr. Faulder had got the prize, as it would encourage other farmers to compete. Had he got it, they might have said, "Oh, Mr. Gawne, who is a rich man, takes all the prizes, and it is of no use trying against him." This they could not now say, and he was glad of it. He had seen a splendid heifer at the Southampton meeting, belonging to the Duke of Devonshire. She was very fat, and near calving. She was put up for sale, and he bid as high as £52 for her, but then stopped, as he did not wish to risk more capital than that, with the chances of her difficult removal. He wished also to get a better breed of pigs. His own are good ones, and have taken the prizes, but they are not the kind he likes, as they are not profitable for the poor man, not being fine enough in the bone. The kind he wanted was one that grows rapidly and fattens easily; but he did not succeed. He then turned his attention to the husbandry implements, examined them closely, and purchased largely. He wished to have had them to-day, but could not get them supplied in time, but will probably have them in three or four weeks hence. They will, as Mr. Binns observed, be very useful in the island, as they are suitable to the soil. When not using them himself, he should be glad to lend them to such of his neighbours as may choose to use them, in order to test them for themselves.

AGRICULTURAL SUGGESTIONS.

Sir,

The barbarian roams over hill and dale, through woods and rivers, surrounded by the elements of wealth, yet his dwelling is more like the lair of the wild beast of the forest than that of civilized men, and to supply the daily calls of nature for food is a matter of contingency. This picture, contrasted with our state in Britain, is in our favour, notwithstanding a casualty in the economy of the seasons occurs, and it cannot be then said that there is no analogy in our circumstances, and which is not very flattering to our civilization; for when society cannot help themselves with the elements of wealth surrounding them, their laws must rest under the imputation of reproach, or their moral or intellectual powers as social beings must be very humble. I allude to what I understand has taken place in a locality of broad fields and extensive downs, with numerous herds of sheep and cattle, and I have my suspicions it is not a solitary case; they have been badly off for water for months; that for domestic use has been carried from a great distance, and sold by measure. Pestilence is the necessary consequence of scarcity of food; and what else can be expected of water, than that man and beast should suffer in their health. The good people of the place, I understand, some years ago, made some feeble attempts at making a tank and sinking a well. The well they gave up, it is said, when they were within the hearing of the gushing of water below them. That it is plain places so circumstanced as that I have been describing, should not be left to provide against such an evil as the want of water, by voluntary co-operation. A hundred or two might do much for them, and they would, I think, not care much about paying interest for it. Why, then, should not the legislature give parishes power to borrow limited sums of money, on terms that would secure their redemption in the course of years, when they could show it was to be expended to procure so essential an object as a constant supply of water? This is a subject in which rich and poor are interested, and I turn it over to Her Majesty's Sanitory Commission. I allude above to the well-sinkers saying they heard water gushing beneath them when they gave up the work; the people in this neighbourhood will say it probably was the case, as within about a mile or two from the place there is one of the greatest continual discharges of water from under rocks of any in the kingdom; and possibly some of our far-famed geologists might, from viewing the country, be able to throw some light on the subject.

I have this spring seen soiling to feed a horse. The advantage of the practice is so great, that it is surprising it should not be more commonly adopted.

Running grass seems to flourish most where the land is loose, and it is allowed to grow above ground; were land rolled and bush-harrowed frequently, would it not destroy the grass? From the experience I have formerly had, I do not think farmers operate sufficiently for their advantage on the surface of the ground. Gardeners like to have a clean surface before they begin to work. I see a field of several acres now covered with rubbish, which, I am satisfied, had the surface been worked occasionally one or two inches deep during the hot weather, it would have been comparatively easy to make it fit for wheat ground this autumn, but will now require much labour and time to bring it into a proper state.

The practice is, to clean walled water-pools when they are nearly dry; and much is the ado in carrying out the puddle, and rendering it fit for using. Query—Would it not be as good a practice to fill them up with dry sand, or loam, and then carry away the whole, and apply it in that state to the land as manure? The work might be done in wet weather; for, fill a walled pool with sand or loam, it will force the water out, and it must become dry.

I have been looking at the salted cabbage—part of which I sent you some months ago—it is still green. I believe some philosopher inferred from wheat-straw having the same glossy appearance as a bamboo cane, that there must be flint in both—it being known that fire had been struck from bamboo and iron—which, I think, has been found to be the case, on their being analysed. May it not, then, be inferred, from cabbage remaining green in salt, that salt is essential to vegetation? And is it improbable that Professor Liebig, or some of our philosophers, might be able to build a theory respecting vegetation from the fact?

I congratulate you on the likelihood of the establishment of an agricultural college at Cirencester, from which much good to agriculture may be anticipated, by its affording to agriculturists advantages for acquiring knowledge they did not possess in former days. Notwithstanding, I hope you will continue to advocate the necessity of an experimental farm and an agricultural museum; for all that co-operate in the wide field of agricultural improvement cannot be college students. There are more ways of communicating knowledge than one, and that of the senses is not to be overlooked. Now, there is much written about tanks and liquid manure (the Flemish and Chinese practice of agriculture); but, after all, that is very different from seeing the whole in practice. Suppose, then, the Royal Agricultural Society of England wished to have experiments made, and were successful in ascertaining some truths of importance, how could they more effectually communicate the results to the public than by having the whole to show in operation? And if any new method could be adopted to secure grain in the straw in wet harvests, such an establishment would always be ready, to try any experiments that might be devised, and I think there are more than one. The conclusion is unavoidable—that the Royal Agricultural Society of England, without an experimental farm, is like a chemist without a laboratory, or a mechanic without a workshop.

An agricultural museum and experimental farm in the neighbourhood of London might be made as great a lion as the Zoological Gardens, Regent Park, and the Royal Agricultural Society. I know from experience that there are pecuniary returns to be made from exhibitions; and, of course, such an establishment on any one of the lines of railroad would be an advantage to it; and possibly, were the situation left for competition, the society would have the different railroad directors offering them land on their lines as a gift.

I am, Sir, your obedient servant,

Cadogan Williams.

Bridgend, August 16, 1844.

The Dodder.—During the autumn of last year Professor Henslow called public attention to the parasitical plant, *Cuscuta Epilinum*, or, as it is commonly termed, "the dodder," which had established itself in some of our flax fields, and at the same time particularly requested the notice of agriculturists to another species of *Cuscuta*, which was then doing considerable injury to the clover in the county of Suffolk, where it was first noticed by the farmers, who considered that their fields presented a novel and unaccountable appearance, circular patches of two or three yards in diameter being either dead or much injured, Professor Henslow having visited the spot, at once saw that the plants were covered with the stem of the *Cuscuta*. The appearance was, as if a quantity of fine closely-tangled wet cat-gut had been carelessly thrown down upon the clover, and it was evidently spreading itself rapidly in all directions. It is of the utmost importance that its progress should be checked, for we find that it will attack lucern, and may probably find its way into our wheat fields. Raking has been tried without success; for if a small piece only be left behind, it immediately again attaches itself to the plant, and again rapidly spreads. One of the most effectual means is to mow the spots, and carry the plants entirely away *before their seed is perfected.* Gas-tar water, undiluted, which may be obtained from the gas-works, or a solution of salt strong enough to destroy vitality in seeds or vegetation for the time being, have been strongly recommended: either can be applied from a water-pot. The *Cuscuta* attacks the stems, and not the roots of the clover, thus differing from the *Orobanche minor*, another enemy to the clover crop. The growth of this weed was noticed last summer in the Isle of Wight, and we much regret its appearance in the neighbourhood of Lewes. During the present season, between Lewes and Brighton, on the right-hand side of the road, there is a field of clover seeds, where this mischievous pest has been busily at work, and the round patches of yellow hue have attracted great attention. This is not the only place in which we have heard of its devastations. It is evidently making its way from one end of the country to the other, and we cannot advise the farmers to be too careful in observing that the seed of "dodder" be not intermingled with their clover seed, as, to use an old adage, "an ounce of prevention is worth a pound of cure," and if they once get this pest into their fields, it will probably cost considerable labour and expense thoroughly to eradicate it.—*Sussex Express.*

THE ROYAL IRISH AGRICULTURAL SOCIETY'S ANNUAL SHOW, AT DUBLIN.

The great annual show of cattle, agricultural implements, produce, &c., of the Royal Agricultural Improvement Society of Ireland was opened on Wednesday, the 14th of August, in the Coburgh Gardens, off Harcourt Street, Dublin, the space of ground allotted for the show being several acres in extent.

At one o'clock the gates were thrown open to the public, and although heavy showers of rain fell at intervals throughout the day, sending the visitors to seek shelter in the marquees and central pavilion, the charge of admission, besides, being so high as half-a-crown, the attendance was numerous and respectable. The number of ladies, however, was not very considerable.

The Lord Lieutenant and suite arrived at about three o'clock, and visited every portion of the exhibition.

Black Cattle.

The number of cattle exhibited for competition in the different classes of this department was numerous beyond all precedent, at least in this country. Quantity, however, as a general characteristic, might be said, but with many splendid exceptions, to predominate over quality. It was, in fact, essentially an exhibition of brood stock, and the foregoing observation applies in a much more extensive degree to the fat stock shown on the occasion. The exhibition presented a variety of almost every kind at present engaging the attention of stock masters in the three kingdoms—short-horns, Leicesters, Devons, Herefords, Ayrshires, West Highland, and, though last not least, the diminutive, but highly useful and profitable little Kerry,, filled the stalls. The short-horns, almost as a matter of course, constituted a vast majority over all the other different breeds submitted for competition.

Fat Stock.

The list was by no means numerous, nor, with a few exceptions, entitled to any particular merit. The grand attraction in this department appeared to be a cow contributed to the exhibition by his Royal Highness Prince Albert. This animal was not at all remarkable for size, and we could not well judge of her symmetry from the fact of her being so very fat. Her clean weight was computed at between nine and ten cwt., which, certainly, does not speak much for her natural dimensions. A splendid five-year old heifer, the property of George Lucas Nugent, Esq., and also of the Leicester breed, stood in the adjoining stall, and from her great beauty and fine proportions, appeared a rather formidable rival to her royal neighbour.

SHEEP.

The contributions for exhibition in this department were by no means numerous. Such, however, as were offered, amounting to little over a hundred, were fairly conditioned and well-bred, being mostly of the Dishley and Southdown blood. From some confusion in the arrangements of the classification, as to the exhibiting of the respective sections and numbers, we are unable to enter into more minute details on this portion of the show.

SWINE.

The exhibition in the different classes of this department offered a a very good average display, both as to numbers and quality. There were no animals of overgrown size and fatness, such as are generally brought forward on similar occasions, but there was manifestly a progressive improvement in the attention paid to the breeding, of far more public utility than the mere heaping of flesh on them to an extent anything but savoury to the taste of the consumer.

HORSES.

Generally speaking, the show of horses, particularly in the thoroughbred portion of the exhibition, did not range beyond mere mediocrity. The cart stallion department was certainly much beyond any of the others, but the number of animals was comparatively few. Of the quality of the ordinary agricultural horses there is but little to say in its favour.

AGRICULTURAL IMPLEMENTS.

The agricultural implements, &c., were in great number and variety, covering a very considerable portion of the field. The drill-grubbers, sowing machines, multi-furrow ploughs, if we may use the term, ribbing ploughs, and other similar implements, were very numerous, and for the most part very curious; but of those in general we would venture to say they are a little too curious. Their improvements are too generally attended with a complication of structure anything but desirable in such articles. There appears to be no allowance made for the effects of straining and rust, for the want of very delicate dexterity in the men to whom the use of them must be entrusted, and for the difficulty, and very frequently the impossibility, of finding smiths to repair the injuries which such implements must receive from wear and accidents. Indeed we have observed several of the beautifully complicated Scotch ploughs at this exhibition, in which the strength of some of the parts seemed quite unequal to the strain they must be occasionally subjected to, and in which the great weight of other portions would render the draught unnecessarily heavy; whilst, at the same time, the work of repairing them would set at defiance the skill of nineteen out of twenty of the blacksmiths who can be found in the country. Thus a great many of those very ingenious machines, like some of our chemical manures, may serve very well as toys for gentlemen in their domains, but are utterly useless to the practical farmer. In the same way we have here several threshing-machines, which exhibit, indeed, considerable ingenuity in their construction, but which, we regret to find, require a great expenditure of power in proportion to the work executed. The friction in all of them appears to be enormously great, and there is undoubtedly great room for further improvement.

Agricultural Produce.

In the classes of butter and wool there were half-a-dozen competitors respectively, but their commodities did not form very prominent features in the show.

The same, however, cannot be said of the seeds, roots, grasses, &c., which filled a department of the exhibition, in which a botanist might pursue an important portion of his studies.

Poultry.

The housewife would have derived particular pleasure from a visit to this part of the show-yard. Some of the Malay fowl exhibited were, indeed, noble birds, and would be objects of curiosity to any visitor.

Flax, &c.

There were numerous competitors for the prizes in this section of the show, and many of the specimens produced were very beautiful. Some exquisite cambric, the produce of Irish yarn and the Irish loom, was sent by Mr. Henning, of Waringstown, who had no competitor; and some beautiful specimens of damask were exhibited by the same, and by Messrs. Andrews, of Ardroyne, and M'Cann and Sons, of Waringstown. Models illustrating the practical management of flax in all its stages were shown on the part of the Belfast Flax Improvement Society, by Mr. Paterson, their flax agriculturist, and were objects of much interest.

COUNCIL DINNER.

The members of the Royal Irish Agricultural Improvement Society, composing the council of the body, dined together in the evening in the round room of the Rotunda, which was tastefully decorated for the occasion, and arranged with evident attention to the comfort and convenience of the guests. The tables were placed in parallel lines across the room, and in the gallery was accommodated the band of the 24th Regiment, which contributed very much to the enjoyment of the evening by their skilful performance of several popular pieces. At eight o'clock the chair was taken by the Marquis of Downshire, and about 350 gentlemen sat down to a banquet, comprising all the choicest viands and rarest delicacies of the season. The wines were of the richest vintage, and the arrangements generally were such as to afford unqualified satisfaction. The vice chair was occupied by J. L. Naper, Esq.

The usual loyal and two or three other toasts having been given,

The noble chairman rose to propose the next. He could not but rejoice at the welfare of the society; that society had watched with an anxious eye over the agriculture of the country, and having giving encouragement to the industrial classes, and laboured with efficient zeal to sustain their success, he could not but rejoice at a meeting like the present when such happy tidings could be communicated. The society of which he was a member was originated by a number of gentlemen who considered it a desideratum; they found in the north of Ireland a most industrious and well-conducted peasantry, but it required some fostering care to protect their industry and reward their labour. Within the last two years this society had made very great progress in Ireland. One hundred district societies had been established—men of all classes, creeds, and political persuasions were enrolled in their numbers—and the more triumphant was their progress upon that account. The Royal Irish Agricultural Society had explained its objects; day after day it had done so; the members of it were desirous of seeing every person righted, and by preserving the happiness of those under them, they thought they could best benefit themselves. He had now to give "The Royal Agricultural Society of Ireland."

Lord Clancarty immediately rose, and said he felt highly complimented, as a member of that society, at the manner in which the toast had been received. He could not but bear testimony to the zeal and manly principle which characterized the conduct of their honorary secretary, Mr. Purcell. It was, indeed, to his strenuous efforts they were indebted for the advancement they had made. He (Lord Clancarty) did not join the society until it became already established in the public opinion; he waited until he was satisfied by personal observation of its usefulness. But, having joined it, he found that he did well by doing so; and he did not despair, through the healthy influence which the society could command, of affecting a happy conciliation—combining persons of every shade of opinion—every religious denomination—as he saw that evening congregated around him. They were assembled for a benevolent and just purpose. They had all their opinions upon other matters, but in that assembly they forgot them all, and sighed only for a union of all parties in carrying out their object. He had now to advert to the Highland and English Societies. They all knew how the Irish Agricultural Society had benefited by the judicious rules and active aid of those societies. His lordship concluded by proposing "The Royal Agricultural Society of England."

Lord Leitrim returned thanks. He felt it no small gratification that he was one of the original proposers and an active supporter of the English Agricultural Society. He felt equally rejoiced that they had established such a society in Ireland. He knew not why the Irish should be their rivals, but their superiors; and he could not help recollecting that long before the English society was established, a voice emanated from the county Armagh asking them what they had to do? His words as to the capacity of Ireland were fully borne out by facts. The soil was capable of abundant produce; the peasantry were very sober, very industrious, very talented, and capable of bearing vast agricultural labour. The Irish Agricultural Society was established to bring that industry, that talent into play, and he had no fear that in that exertion they would succeed.

The Duke of Leinster then rose to propose a toast which he felt delighted in doing—it was "The Health of the Chairman of the Council of the Agricultural Society of Ireland." It was very gratifying to find that in all their deliberations, in all their movements, they had his sanction and support. It was an ascertained fact that Lord Downshire managed his property in a manner that gave satisfaction and comfort to his tenantry. His lordship had taken a very active part in promoting the objects of the agricultural society; and when they reflected upon his station and the weight it brought with it, they could not but feel with him (the Duke of Leinster) that he was deserving of their warmest approbation. The Duke of Leinster concluded by proposing "The Health of the Marquis of Downshire."

The chairman returned thanks for their kindness, and having done so, he said he could not but allude to the compliment which the society had received from his Royal Highness Prince Albert. It was a most beautiful description of breed cattle; and the chairman would be sorry the noble prince having sent that cow to Ireland, if the Irish people did not value the compliment. He could not but repeat his confidence in that society; he had no doubt of its prosperity, and he was proud to say that he dwelt amongst an industrious and loyal population.

The chairman next proposed "The Health of His Grace the Duke of Leinster."

The Duke of Leinster returned thanks.

The chairman said he had now to propose another toast in acknowledgment of the very efficient services of his honourable friend opposite, Mr. Naper, of Loughcrew. There were many gentlemen in the room at present, who, from experience, were better able to appreciate the value of his services in the county of Meath than he was; but he knew sufficient to justify him in saying that there was no landlord in Ireland who, on all occasions, for many years, had manifested a more sincere desire to co-operate with others in the promotion of all objects calculated to advance the interest of the people. As to his administration of his own estate, he was sure, if carefully examined, they would find it to be in a most flourishing and a most fitting state—in a state calculated to confer benefit on the owner and occupier of the land. Mr. Naper had, in particular, attended to the wants and comforts of the lower orders. He (the chairman) used the term lower orders, not because he considered them inferior in importance, but because they happened to be placed in a station lower in rank than that in which those by whom he was surrounded happened to move. He heard a gentlemen that day who had turned his attention to this very important subject use a very expressive term. He said he wished that all the labouring people and farming classes should have a dry bed for their seed corn, and a dry bed for their families to lie upon. He (the chairman) felt high gratification at seeing his Excellency the Lord Lord Lieutenant expressing so much interest that day in their affairs, by walking through the show-yard, and examining the stalls and beasts, and in also viewing Mr. Drummond's

seeds and grasses, and those of Mr. Scott, of Belfast, whose collecttions did them the greatest honour. His Excellency expressed himself highly pleased at what he had witnessed, and promised to give the society his best support.

The vice-president rose to return thanks, and was received with the most enthusiastic demonstrations of applause. When silence was obtained, he proceeded to say that he very sincerely regretted that the want of punctuality which had unfortunately taken place in the arrangements of the evening, and the lateness of the hour, rendered it imperative upon him to compress within as brief limits as possible a speech which it was intention to have inflicted upon them. Having had the honour of being vice-president of the society for the province of Leinster since the institution of that society, and being selected to act as vice-chairman on occasion of the interesting festivity which they were that night celebrating, he had originally intended to address them at some length, and render something like an account of his stewardship, but as matters now stood, the hour being so late, this was a duty which would take too long in accomplishing, and he could not think of detaining them on such a subject. There was, however, one topic on which he would take occasion to offer a few remarks; for it was one of great national importance, and one, moreover, which had enlisted the attention of one of our ablest national writers—Dr. Kane. That learned and highly-gifted gentleman called the attention of the country to the necessity, justice, and good policy, of remunerating liberally the agricultural labourer; and in the last chapter of his valuable work on the "Industrial Resources of Ireland," had clearly demonstrated this proposition, that cheap labour would eventually prove anything but cheap work. He trusted that that great society would adopt that sentiment as their own, and he hoped the day was not far distant when the truth of it would be acknowledged throughout the length and breadth of the land. He (Mr. Naper) had recently visited Southampton, in company with the Duke of Leinster and the Marquis of Downshire, and he thought it right to state that he was deeply gratified with the result of his visit. He had attended the great agricultural meeting in Southampton, and his object in going there was to learn his duty to his country, an object which he trusted he had in a very great degree attained, for he heard and he knew many things which might be turned to excellent account for his country's service, and he gathered an amount of practical experience which he trusted he would be enabled to apply to her advantage. In travelling on the train to London, he met at

Rugby two very intelligent fellow-travellers, with whom he fell in conversation. One of them was an elderly gentleman from Monmouthshire. He was well versed in all matters connected with the science of agricultural improvement—appeared to take a deep interest in Irish affairs, and was so highly pleased with Dr. Kane's work, which he (the vice-chairman) lent him to read, that he made a memorandum of its title in his pocket-book, and declared his intention of purchasing it, observing at the same time that he thought it was a work which might be read with almost equal advantage by the farmer in England as in Ireland. They had a long and interesting conversation, in the course of which they took occasion to allude at some length to the different condition of the lower orders of society in both countries. Opposite them sat a gentleman who was one of the directors of the railway upon which they were travelling. With him, too, was a man of shrewdness and intelligence. He entered into conversation, and asked him how it came that he and men of his class, who principally resided in towns, and had their money in the stocks (generally speaking), got their labour done in a better and more satisfactory style than agriculturists? The director replied, and with great force and truth, that the reason why this happened was, because he and men of his class paid the labourer honestly and liberally in the proportion of what he was able to do, and accordingly had their work well done. They were engaged in a description of commercial enterprize which was peculiarly open to danger, and liable to be injured by casualties. It was absolutely necessary that they should have in their employment labourers who were not only good and careful workmen, but who also entertained kindly feelings towards their employers, and were anxious to promote, as far as in them lay, the interests of those employers. "In this policy," said the director, "which is at once the most wise and the most humane, lies the great secret of our success. We have built for our workmen houses, schools, and chapels. We have made them look up to us as protectors. We have made them friends and members, as it were, of our family. They are sensible to our kindness, and the consequence is that our work is well done, and our workmen are contented." Common sense and common justice should admit that this was the best and the wisest system, and he hoped to see the day when it would be universally adopted throughout Ireland. There was in that room a gentleman, whose name he could not mention, who had adopted this principle in its widest and most liberal sense. He paid his servants in the honest proportion of their works: he treated them as friends and as part of his family, and the wisdom of his so doing was eloquently evidenced in the success which has attended him in all his agricultural pursuits. Dr. Kane had demonstrated how much might be effected in agricultural pursuits, even by a man who was not originally educated for them; but it was vain to talk of theories unless they were resolved to reduce them to practice. If they did not cordially combine and aid one another, nothing could be done. The time had now fully arrived when it was absolutely necessary that something should be done to place the agricultural interests of this country in a prouder position than they heretofore occupied, and in such a country, and with such a people, the task would not be difficult of accomplishment, for the soil was fertile even to a proverb, and the heart of the Irish labourer, after all, was not in the wrong place. His own tenantry gave him a reception which gladdened his heart, when he returned amongst them a few days since. Sixty or a hundred of them turned out when they saw him approach, and gave a cheer that made the air resound again; and there was no act of kindness that he had ever performed towards them which they did not treasure most gratefully in their remembrance, as was clearly evidenced by the cordiality of the welcome they accorded him. On his way to his country-seat he passed through a country not inferior to England, but, on the contrary, vastly superior to it, and he was happy to say, that in many districts the land appeared in so high a state of cultivation, that were it not that the peasantry who occasionally crossed his path and reminded him that he was indeed in his own green isle, he would have imagined he was in England. He did not wish to see the Irish agricultural labourer in the condition of a slave or a drudge; on the contrary, he wished to see him happy and comfortable, and he was persuaded that the interest of the proprietors would be best promoted by advancing him to that state of comfort. He was not without hope that there were better days in store for their country, and he was inclined to believe that much good might result from the landlord and tenant commission which was now sitting. A distinguished member of that body had assured him that the commission would gladly take into consideration any judicious suggestion consistent with their duties that might be made to them, and for his own part he thought that if they were to lay before the commission some well-digested scheme for improving the condition of the agricultural labourer in Ireland, they would by so doing discharge a duty which they owed as Irishmen to themselves and their country.

The chairman said, that in giving the next toast, he could but express the deep regret which he experienced in being obliged to inform them that the gentleman whom that toast was designed to honour, Mr. Peter Purcell, had written to him to say that his state of health was such as to render it impossible for him to attend at that banquet. The rectitude of Mr. Purcell's conduct, the simplicity of his object, and the success which had attended his labours, had in his (the chairman's) mind, reflected the highest honour on him. He had much pleasure, therefore, in proposing, "The Health of Peter Purcell, Esq.," who, in the list of toasts, had been very truthfully described as the father of his country.

The chairman said he had next to propose a very important toast, which he was sure would be warmly received—"The Health of the Flax Improvement Society of Ireland." That society, by encouraging the growth of flax crops, had rendered an essential service to Ireland, and through its instrumentality no less a sum than £60,000 had been expended in the country, which, were it not for their exertions, would have gone to enrich the inhabitants of some foreign clime.

Sir Robert Bateson responded to the toast. At that late hour it would not be good taste in him to detain them by any disquisition upon the merit and management of flax crops, and, accordingly, he would merely confine himself to an expression of gratitude for the kind manner in which they had received the health of a society, which, he ventured to assert, had conferred signal service on the country, and which was eminently calculated to confer great benefit on the different causes which the agricultural society had at heart, and desired to promote. Their noble chairman had estimated at too low a rate the sum of money which was expended in that country through the instrumentality of the flax crop society. He had estimated that sum at sixty thousand pounds, but it amounted, in point of fact, to one million; and if the society had never done anything more than to cause the expenditure of such a sum on our native soil, instead of sending it abroad, they would, by so doing, have rendered an essential service to the country, and deserved well of the Irish public. They all knew the great benefit which flax crops, and a consequent linen trade, had conferred upon the north of Ireland, and it was needless, therefore, for him to expatiate on a fact so self-apparent; but addressing himself to those who resided in districts remote from the north, he was anxious to impress upon their minds the vast advantages which would result from encouraging the growth of flax. It would be a great source of employment for the people, and employment of our population was, after all, what we mainly wanted in this island. First, consider the tillage of the soil that was necessary before the crop was sown, and then observe what and how various were the labours it afforded. Women and children could be engaged in weeding it, and the pulling, the watering, and the spreading of it would employ thousands of the male population. The society which he belonged to had left nothing undone to promote this description of agriculture. They brought over from Belgium persons who were qualified to superintend the rearing of the crop according to a new and improved system, and they sent young Irish agriculturists to Belgium, and having attained proficiency in the art there, they returned home, and gave the benefit of their observation and experience to native farmers. The Irish soil was capable of producing as good, if not a better flax crop than any foreign land, and, therefore, as Irishmen, and good agriculturists, he called upon them to support and encourage such a crop; for by so doing they would be giving employment to the peasantry, at the same time that they caused a vast deal of money to be spent in the country. The great object of every proprietor ought, in his opinion, to be, to set an example to his peasantry, to live amongst them, and to spend his money amongst them. He did not want to trench upon the doctrines of political economy, which was too deep a study for him, but he thought that what was furnished by the country ought to be spent in the country, and it was much better that it should be so spent, than that our money should be sent to other lands to enrich foreigners. A meeting would be held on Friday next, at eleven o'clock, for the purpose of promoting flax crops in Ireland, and he trusted that all who had the agricultural interests of the country at heart would attend and co-operate.

The chairman had now come to the thirteenth toast on the list—a very important one—" The Steam Navigation Companies, the Railway Companies, and Inland Navigation Companies of Ireland." With respect to the Steam Navigation Company, it had, at that meeting, conferred amazing benefits on them, as a considerable number of the cattle that adorned their show-yard were conveyed to their destination by steam. To the railway companies he would wish particularly to allude, as they afforded proof, if proof were wanting, of the improvement that was taking place in Ireland. They were about to have a railway constructed to Cashel, and he hoped to Cork, and the extension of the Drogheda railway to the north-east of Ireland, and the establishment of other railways he could mention, rendered it perfectly clear that confidence was springing up in England and Ireland as to the safety of expending capital on them. He was sure the existence of that confidence would very much forward the views of that body, and he was certain they could not lend a stronger hand to aid the improvement of the country, than by going on steadily supporting the original objects of this society. They had heard many speeches that evening, and numerous well-founded observations had fallen from the speakers, all of them men of experience and property in the country, and he trusted those observations would sink deeply in their minds. He was convinced they would leave that meeting with the determination to carry out, in their respective districts, those objects which they thought would tend to the improvement of the country, and which that society was formed to support.

Mr. George Alexander Hamilton, M.P., spoke to the toast. He said—My lords and gentlemen, as chairman of one of those companies which have been adverted to by your lordship, it is my duty to acknowledge and respond to the toast which has just been proposed. Your lordship has adverted to the accommodation afforded by the Steam Navigation Company to this society, and I trust the time will never arrive in this country when there will be found, on the part of any of the great companies connected with the modes of communication in it, anything but an anxiety to accommodate and promote, to the best of their ability, the interests of the Royal Agricultural Society. My lords, it is alike their duty and their interest to do so. Regarding Ireland as a great agricultural country—regarding her population as an essentially agricultural population, it is impossible to imagine any two things more completely identical in interest than the promotion of agriculture, and the encouragement and support of great lines of external and internal communication. My lords, they mutually hang, and act, and re-act upon each other. By facilitating the great internal and external communication of the country, you stimulate and encourage our industrial and agricultural resources, and by stimulating agricultural and industrial resources you strengthen the means of that great communication, and encourage and create the necessity for establishing new ones. It is impossible for any one to estimate adequately the immense importance of the introduction of steam navigation, and its effects on the industrial and agricultural resources of this country, and if there be any person to whose foresight, intelligence, and practical ability, the agriculturists of this country are indebted more than another—I don't know whether the gentleman to whom I refer is present or not—that person is Mr. Williams, the founder of the steam navigation in Dublin, and the promoter of almost all our inland navigation. It may be said that railways are only yet in their infancy in Ireland, but those who have seen the immense quantities of agricultural produce—the enormous cargoes of pork and other articles, the production of inland counties, that are now conveyed by the Ulster Railway to Belfast, can best appreciate the result and bearing that those means of communication must have upon the agriculture of this country. Happily the difficulties with which railway projects in this country were surrounded are now in a great degree removed. The readiness—I may say the avidity—with which English capitalists are now disposed to invest their capital in Irish railway undertakings, and, I am happy to add, the competition in that respect that is beginning to prevail on the part of Irish capitalists, while they afford the strongest proof of the present improvement, supply also the strongest earnest of progressive advancement in this country. I sincerely hope when this society meets again, as I hope it will meet on the estate of my noble friend opposite, in the west of Ireland, that a line of communication will be in process of formation, not only to the north and south, but to the west of Ireland; and extensive districts in the west of Ireland which, from the want of proper communication, have hitherto not been so available for the prosperity of the country as they might easily be rendered, will thus be made. For myself, I must say I cordially concur, and entirely sympathise in the expressions that fell from my honourable friend, the vice-president of the society. I am quite sure the solution of a problem of great difficulty with reference to this country, is to be found in the improvement of its agriculture. No sacrifice can be too great to attain that object. Any sacrifice will be amply repaid in a pecuniary point of view, but more amply, infinitely more amply repaid in the sympathy, affection, and regard, which those who make it will be sure to experience from our generous and warm-hearted peasantry. My lord, at this hour I will only add, that I thank you for having associated my name with the toast which you have proposed. It will always afford me gratification and pride to be connected with any undertaking that will be calculated to develope the resources and improve the condition of my native country.

The Marquis of Kildare rose and said, that at that late hour he should not do more than say that he fully concurred in the sentiment conveyed in the toast which he desired to bring under their consideration. He, therefore, felt great pleasure in proposing, "The Health and Prosperity of the Industrious and Labouring Classes of Ireland."

The toast having been drank, the company separated at ten minutes to twelve o'clock.

THURSDAY.

The prizes were declared this day. The following is a list of those adjudged in the black cattle and horse classes:—

BULLS, &c.

Section 1, *short-horned*—First prize for best bull, four years old, to Robert Burrowes, Gultown, Kilcullen, challenge cup, gold medal, and thirty sovereigns; second prize William Blaney Wade, Clonbraney, twenty sovereigns.

2, first prize for best bull, 1 year and 8 months old, Alexander Bannerman, Chorley, Lancashire, twenty sovereigns; second prize, Hon. A. F. Nugent, Portumna, five sovereigns.

3, best yearling bull, Robert Burrowes, Gultown, Kilcullen, twenty sovereigns.

Devons—best bull, four years old—First prize, Earl of Charlemont, Marino; second prize, Edward Rotheram, Crossdrum, five sovereigns.

Long-horned—First prize, best bull, 2 years old, Rev. M. B. Forde, Seaforde; ten sovereigns; second prize, George L. Nugent, Castlerichard, five sovereigns.

Herefords—First prize, best bull, eighteen months old, George N. Purdon, Lisnabin, ten sovereigns; second prize, Richard N. Reynell, Killynom, five sovereigns.

Ayrshires—Best bull, five years old, Lord Dufferin, ten sovereigns.

Galloways—First prize, best bull, 4 years old, Thomas Seymour, Ballinasloe, ten sovereigns; second prize, Hugh Watson, Cupar, Scotland, five sovereigns.

West Highland and Kerry breeds—First prize, best bull, one year old, D. C. Latouche, Marlay, ten sovereigns; second prize, Edward Carroll, Kilcolman Abbey, Kerry bull, Paddy Blake, one year old, five sovereigns.

Class H.—*Pure breeds for fattening purposes*—Section 1, first prize, best cow, William Sherrard, Kilbogget, ten sovereigns; second prize, A. H. Pollock, Mountainstown, five sovereigns.

2, first prize, A. H. Pollock, Mountainstown, ten sovereigns; second prize, Right Hon. Frederick Shaw, Kimmage House, five sovereigns.

3, for best two-year old heifer, Richard Almond, Wigan, England, five sovereigns.

2, for best lot of two yearling heifers, Hugh Watson, Keillor, Cupar, Scotland, five sovereigns.

COWS AND HEIFERS.

Any pure Breed for Dairy purposes.

Section 1, first prize, Hon. A. F. Nugent, Portumna, ten sovereigns; first prize, A. H. Pollcok, Mountainstown, 5 sovereigns; Alexander Bannerman, Chorley, England, five sovereigns.

2, for best cow or heifer in calf or milk, first prize, Richard Almond, Wigan, England, ten sovereigns; second prize, P. J. Kearney, Clonmellon, five sovereigns.

3, for the best two-year old heifer, Hugh Kirkwood, Kilmains, Scotland, five sovereigns.

4, for best lot of two-yearling heifers, Gabriel Dunlop, Stewartstown, five sovereigns.

Cows and Heifers for Fattening Purposes.

Section 1, first prize, Hunter O'Reilly, Delgany, ten sovereigns; second prize, Martin Winder, Dunlavin, five sovereigns.

2, for best heifer, three years old, first prize, Samuel Winter, Trim, ten sovereigns; second prize, William A. Moore, Geraldstown, county Meath, five sovereigns.

8, for best two-year old heifer, Sir George Grey, Moate, five sovereigns.

4, for best lot of two yearling heifers, William Garnett, Moynalty, five sovereigns.

COWS AND HEIFERS.

Any Pure Breed for Dairy Purposes.

Section 1, first prize, George L. Nugent, Castlerichard, five sovereigns.

2, for best cow or heifer, in calf or milk, calved after 1st January, 1841:—First prize, William Fillgate, Ardee, gold medal and ten sovereigns; second prize, J. R. Minnett, Nenagh, ten sovereigns; third prize, Robert Thompson, Monaghan, five sovereigns.

3, for best two years old heifer, Hon. A. F. Nugent, Portumna, five sovereigns.

4, for best lot of two yearling heifers, Arthur Baker, Upper Gardiner-street, five sovereigns.

FAT STOCK.

Any Breed.—Section 1—First prize, A. C. Bradford, Dundalk, 10 sovereigns; second prize, P. J. Kearney, Clonmellon, five sovereigns.

2, for best fat cow or heifer, any breed, first prize, His Royal Hignness Prince Albert, silver medal; second prize, John Farrell, Kells, five sovereigns.

3, for best lot of two fat heifers, Henry Greene, Dunboyne, five sovereigns.

Extra Stock—Bulls, prize, William Ramsay, M.P., Barnton, Scotland.

Cows and Heifers—Prize, the Earl Charlemont, Marino.

HORSES.

Section 1—For the best cart stallion, over three, and not more than seven years old, first prize, G. Rait, Edenderry, 30 sovereigns.

2, for the best cart stallion, not more than three years old, Patrick Hoey, Malahide, fifteen sovereigns.

3, for the best thorough-bred stallion, the Earl of Miltown, silver medal.

4, for the best thorough-bred brood mare, John Armstrong, Ballybrittas, ten sovereigns.

5, for the best brood mare, first prize, Thomas Wilson, Glasgow, ten sovereigns. second prize, James M'Kinlay, Glasgow, five sovereigns.

6, for the best cart colt or filly, not exceeding 3 years old, James M'Kinlay, Glasgow, five sovereigns.

7, for the best one year old cart colt or filly, William Sherrard, Kilgobbet, five sovereigns.

8, for the best Spanish ass, William Reilly, Mullingar, five sovereigns.

Applications having been made after the judges had given in their awards for an authorised list without effect, we are obliged to furnish the above dockets, as far as we could make them out, appended to the different stalls. We cannot, therefore, vouch for omissions.

THE GRAND BANQUET

Took place on Thursday evening, at the Theatre Royal, Hawkins's-street, which was tastefully fitted up for the occasion, and presented a brilliant and picturesque appearance. The chair was taken by His Grace the Duke of Leinster, and the vice-chair by the Right Honourable the Earl of Erne. About 1000 guests sat down; the proceedings, however, were not of sufficient interest for our pages.—*Abridged from the Pilot.*

FIBROUS COVERING.

TO THE EDITOR OF THE "CORNWALL GAZETTE."

SIR,

I have received numerous applications from different parts of the country, requesting further information on the above subject. Many are desirous of information as to the best method of carrying it into practice, others respecting the quality of the grass produced by this extraordinary action as compared to that grown under ordinary circumstances, and scientific men for information respecting the supposed agency involved in the excitement.

In regard to the best mode of practically managing fibrous covering, I shall give the best information in my power; from all I can see and learn, that given by the president at the last meeting of the East Cornwall Experimental Club, I believe to be the best; and will possibly be so regarded by the public. He detailed many experiments showing that a given quantity of fibrous covering was essential; that too much, like too strong a dose of any powerful manure, would destroy vegetation, whilst too little would produce no sensible effect. A single rod would produce no sensible action in less than six weeks or two months, whilst the proper aggregate number would produce a sensible action in four or five days. If straw were used as the fibrous covering, it should be at the rate of a ton and a half to the acre, or about 20 lbs. to the rod, to be uniformly laid over meadow or lay grass; it should be removed, and the grass fed off, at the end of three weeks, and not left longer. He recommended folding sheep on the ground, as the best mode of feeding it off, moving the hurdles from one part to another, and immediately recovering with the straw. Some management is required in taking off the straw for feeding; it should be done a few days before being stocked, for the purpose of being more fully exposed to the sun and air; an iron tooth-comb, or rake, should be used, the teeth bent in the segment of a circle, and placed in the end with the concavity towards the handle, about 2½ inches from each other, the teeth being about eight inches in length. It may, if of a large size, be drawn by a horse, or by a man, if smaller; the straw should be raked into rows, in case the whole is to be stocked at the same time; but in case of folding, that raked off from the fresh fold should be laid on the ground whence the grass had just been eaten. Some care is required in raking it off clean, because if any short straw be left entangled in the grass, it would (if in any quantity) probably occasion the cattle to pass over and refuse to eat it. Mr. Gurney observed, that he had found fibrous covering of the branches of trees and brushwood equally effective with the fibrous covering of straw in producing the excitement when properly laid on; and he thought in many respects it was preferable; partly on account of its being less troublesome in laying on, and removing; also on account of its not absorbing water in showery weather; but more particularly on account of its keeping its position, the latter from its weakness in wet weather giving way and falling too flat on the grass; which, when it becomes six or seven inches high, "goes to lie" under its weight; whilst in the other case, the fibres keep their position, and allow the grass to grow through. If the grass in spring is eaten off every fortnight, when it should be, this objection does not obtain. The action of brushwood as compared to straw in producing vegetation seems to be about the same. Mr. Gurney stated, that in a careful experiment, the increase of grass from the action of fibrous covering of straw, during three weeks, was found to be 5000 pounds per acre—namely, from the 24th of June to the 12th of July—that a portion of a field during the same period under the action by branches of the larch was 4800 lbs., nearly the same, allowing for inaccuracies in cutting and weighing; under spruce and beech branches about the same; and under brushwood, cut from the hedges, it was so equal in appearance, that the grass was not cut and weighed. The expense of brushwood was about 3s. 6d. an acre for cutting and laying down; the expense of carriage would vary according to distance. I presume this kind of covering would last two years, and then be of about half its original value for fire. Some suppose that this very abundant production of grass must exhaust the soil. This is not the case; neither does the rationale of its action lead us to suppose that such a result would be produced. The action of fibrous covering on manures, so far as I am acquainted, has only been partially tried. On grass top-dressed with guano at the rate of 200 lbs. to the acre, the increase was not more than 5000 lbs. in three weeks. On grasses manured with nitrate of soda, at the rate of 160 lbs. to the acre, there was about the same increase. There was an equal increase on a contiguous portion of the same field, on which no manure was applied. Two portions of the same field, manured with guano and nitrate of soda separately, were purposely left uncovered; on these, there was no appreciable increase of herbage during the three weeks; the grass on which the nitrate of soda had been used was darker in colour, but otherwise no difference with that of the rest of the field. This experiment shows that there was no sensible action from either of the manures during this period; and that the increase in every case was due to the fibrous covering. On the quality of the herbage as fodder, there are no facts that I am acquainted with, capable of accurately showing its relative value. I have no reason, however, from what I have seen, to doubt that it is equally nutritious with any other. I have examined, as I have stated in my former letter, the botanical condition of the herbage, and find it healthy and perfect in all its stages of growth. I have chemically examined it also, and find, so far as my enquiries have gone, that it contains the same elements as other herbage in the same field of the same natural order. That the incombustible portions are the same, any one may satisfy himself by drying and burning given quantities, and weighing the residue. The quantity of hay seems in an equal ratio with other grass—3000 lbs. of the one gives about 1000 lbs. of hay when dry—3000lbs. of the other gives the same. There is no reason from these data, and observation on its effect on cattle, to suppose it to possess different qualities from other grass.

We now come to the nature of the agency which produces this extraordinary action. I can say little on this head at present: it seems to involve difficulties in the solution of problems connected with vegetable physiology supposed to be solved by received theories. One experiment connected with the influence of light and temperature on vegetation detailed by Mr. Gurney is highly interesting. It has, since the meeting at Launceston, been repeated by several besides myself, with uniform results. A piece of grass covered by day with straw, and uncovered by night, becomes of a deep green colour in three weeks, and much increased in quantity; whilst a piece of ground contiguous, covered by night and uncovered by day, during the same period, was injured; the blades of grass became yellow at the tips, and soon evidently in an unhealthy state. The fibrous covering in this experiment was oaten straw laid on at the rate of 20 lbs. to the rod. The quantity of light admitted to the grass in the day experiment was very small, and viewed theoretically, insufficient to effect the chemical changes ascribed to it. The result of the night experiment seems a decided answer to those who suppose that the action of fibrous covering is due to temperature. Extensive experiments are being made in many parts of this country, the results of which and the manner in which they are conducted I hope will be made public. I have given sufficient information to enable any one acquainted with the subject to experiment so as to satisfy himself. The agricultural public cannot be too strongly urged to the policy of fully and fairly investigating this most interesting and important subject.

I have the honour to be, Sir, your obedient servant,

CHARLES KINGFORD VACY, M.D.

LAUNCESTON, August 19, 1844.

Good Landlords.—Sir Henry Winston Barron, Bart., M.P., has commenced draining for all his tenants on his extensive estates, at his own expense, and under the superintendence of a professed drainer. He pays their rent charge and poor rates and has built and slated houses for them. Edward Galway, of Duckspool, Esq., J.P., is also draining extensively on his estates.—*Cork Examiner.*

ANNUAL MEETING OF THE HIGHLAND & AGRICULTURAL SOCIETY OF SCOTLAND, AT GLASGOW.

The great annual gathering of this highly influential and useful society commenced on Wednesday, the 7th of August, in the city of Glasgow; and some idea may be formed of the importance which is attached to the annual meetings of the above-named body, when it is computed that no less than 100,000 persons visited that city on this occasion, and that the sale of tickets for the show, at 2s. 6d. and 1s. each, realised the amount of £1523 11s. 6d.

General Committee Dinner.

The dinner of the committee, open to members of the society, and to those on the list for admission as members, took place on Wednesday evening, at six o'clock, in the Trades' Hall. The Earl of Eglinton occupied the chair. In consequence of the absence of Mr. Campbell, of Islay, who should have filled the office of croupier, the noble lord requested the Lord Provost to perform that duty, which his lordship, under the circumstances, consented to do. Upwards of 200 noblemen and gentlemen sat down to dinner.

After the usual loyal toasts, the army, the navy, &c.,

The chairman said the toast which he had now the pleasure of bringing before them was one which must be eminently interesting on this occasion—he meant "The Highland Society, and its President, the Duke of Richmond." He believed it was a most excellent society, and his grace one of the most worthy presidents that any society had ever the honour of possessing.

Lord Ranelagh then proposed "The Lord Provost of Glasgow."

The Lord Provost returned thanks, and after a short pause again addressed the company. It was seldom, he said, it had been his lot to bring forward a toast which he was more sure would be received with enthusiasm than the one he was now about to propose. He was certain when he named the Earl of Eglinton, their respected chairman, he felt confident that if ever enthusiasm could be created at a meeting by the mention of a name, it would not be wanting on the present occasion.

The chairman returned thanks.

The Lord Provost then proposed "The Health of the Judges who have been appointed to award the prizes."

Mr. Heriot, in the name of the judges, returned thanks.

Mr. Campbell, of Craigie, in proposing "The Royal Agricultural Society of England," spoke of the great importance of that institution. Three years ago he had visited England, along with some friends, for the express purpose of judging for himself as to the accuracy of the statements so often made, that Scotch agriculture was superior to the English. They went to the midland counties, and there received kindness which he would never forget. Though they had no introductions, every door was open to them, and they had only to say that they were farmers from Scotland, in search of information, in order to receive a hearty welcome. The result of the visit was, a high impression, indeed, of the prosperity of agriculture in England. Attached as he was to the Highland Society of Scotland, with which he had so long been connected, and aware as he was of the great benefits which it had conferred on England, he could not be blind to the successful exertions of the Royal Agricultural Society of England. They were longer in starting than the Highland Society, but they had gone on at a greater pace, and he must admit that the true principles of agriculture had been better instilled into them before they began. He would only say, that they saw in England many things which it would be well for them to imitate. Perhaps, on this occasion he might be permitted, as a practical man, to take exception to a statement made by Dr. Buckland, that guano would not produce two crops. This was a matter of such importance, that in throwing doubts on the subject, Dr. B. was bound to state his reasons. His own practice led him to think that Dr. Buckland was wrong. The year before last he had a crop of Swedish turnips on land manured with guano, and last year, after them, a most excellent crop of wheat; but it was to be observed, that the shaws of the potatoes were turned in. Dr. Buckland might be able to tell the meaning of this, but, at any rate, he would defy any man to show a better crop of turnips and of wheat than he had in these two years, so that he found, practically, two crops could be got off guano.

Earl Cathcart expressed concurrence in what had fallen from Mr. Campbell as to the Agricultural Society of England, observing that the march of improvement was also going vigorously forward in the sister kingdom; and after an eulogium on the efforts of the Agricultural Improvement Society of Ireland, the noble earl proposed a toast to the prosperity of that institution.

Mr. Barton, a member of the society, returned thanks.

Colonel Lindsay, of Balcarres, referred to the great benefits conferred upon the country by the Agricultural Chemistry Association of Scotland,

and to the efforts of Professor Johnston in connexion with that institution. "The Health of Professor Johnston, and Prosperity to the Agricultural Chemistry Association," was then drunk with great applause.

Professor Johnston returned thanks, and showed the necessity which existed for a society like that with which he was connected, taking up important branches which the Highland Society, from its nature and extent, could not undertake. He pointed out the public benefits which could not fail to arise from the application of the principles laid down by the association, and observed that these benefits were common to all, and not confined merely to members of the society. From England they often saw reports as to the adulteration of guano and other manures, while in Scotland there had been no quantity of guano worth speaking of adulterated. This showed the moral effect of such an association as he represented, and they might depend upon it, that if adulteration was attempted it would very soon be discovered.

The party separated at half-past nine o'clock.

THE BALL.

This was an exceedingly brilliant affair. The company commenced to arrive at the Assembly Rooms, where the ball took place, about ten o'clock, and in the course of an hour afterwards the large hall, where the dancing was carried on, was crowded by an assemblage principally composed of the youth, beauty, rank, and fashion, of the West of Scotland. The dancing was kept up till three in the morning, and the greatest enjoyment seemed to prevail to the very last.

THURSDAY, AUGUST 8.

PUBLIC BREAKFAST.

This morning a public breakfast took place in the Black Bull Hall, at 8 o'clock, under the auspices of the Agricultural Chemistry Society, in order to have some conversation on agricultural subjects. The question for discussion was—"The best means of making the practical farmer acquainted with recent discoveries in science, and enabling him to apply these to the cultivation of his own farm." The hall was crowded to overflowing. Sheriff Alison in the chair. The breakfast having been discussed,

Sheriff Alison explained the object of the meeting. It was of the highest importance that the greatest amount of information regarding the science of agriculture should pervade the community, as upon agriculture as well as upon manufactures and commerce depended our national prosperity, our national existence. Though not much acquainted practically with agriculture, he would yield to no man in his anxiety to promote its prosperity. It had been alleged that Great Britain must necessarily be an importing country, and that its agricultural resources were already expended, but this was a fallacy. In Great Britain there were 20 millions of acres of arable land under the plough; 27 millions in grass and pasturage; 15 millions which could be rendered arable; and 15 millions of mountain pasturage. Supposing, therefore, the 20 millions to be under crop, it appeared from Mr. M'Culloch that the average produce per acre was 3½ qrs. of grain; and by the recent application of science the average must now be more. Supposing that in addition to the present 20 millions, 10 millions more are improved or put under crop, this would be equal to 30 millions of acres, and at the average of 3½ quarters per acre, the produce would be 105 millions of quarters of grain or other nutritious aliment. There were also 27 millions of acres of grass-lands, besides the mountain pasture, for the rearing of cattle. The average consumption of grain by each individual in Great Britain is estimated as equal to one quarter per annum, so that even independent of the aid of science the soil of Great Britain was capable of sustaining 100 millions of inhabitants. What, then, would be the state of our manufactures? The value of our own consumption of manufactures was estimated at 133 millions per annum, and the exports, including the colonial, 50 millions, the foreign alone being 35 millions. Now, if the population should increase to 100 millions, the home consumption of manufactures would increase to 400 millions a-year, 8 times the amount of our whole present exports, and 12 times greater than the exports to foreign parts. It was thus demonstrated what our agricultural resources were, and how essentially necessary it was to attend to their development. In Great Britain there were 10 millions of arable acres never yet ploughed; and were science properly applied to agriculture, the same results would follow as had followed the application of science to travelling.

Mr. Burnet, of Gadgirth, would, as a practical farmer, give a few instances of the benefit he had derived from the application of the discoveries of science to agriculture. He was not a scientific farmer, but he had followed the advice of scientific men, and was generally successful. When he was told that the principal food of plants was derived from the atmosphere, he saw that it was necessary to open up the soil by draining, subsoiling, and pulverizing, so as to admit the atmosphere freely, and had thereby obtained large crops. Land which some time ago was not worth 15s. an acre, was now valued at 45s., and produced large crops of excellent wheat. In some cases, where, by the ordinary practice, 30 bushels had been obtained, he had, by the application of ammoniacal manures, raised 40; and by applying saline manures he had obtained 50. He had applied gypsum to clover and grass, and found his crops doubled; the cattle preferred the clover, and it remained three years in the ground instead of two years. He then described his mode of preserving the liquid portion of the ordinary manures in tanks, and retaining the ammonia by means of an application of dilute sulphuric acid, which not only retained what previously evaporated, but removed any offensive smell; and on applying it to turnips he found he had a great increase in bulk. He had tried gypsum with turnips, and found it doubled the crop of Aberdeen yellows, but had little effect on the Swedish; and he found also that gypsum had not the same effects on the crops if the soil had been previously dressed with manure mixed with sulphuric acid. From these facts he was convinced that agricultural chemistry should be studied by every farmer.

Mr. Alexander, of Southbar, said Mr. Campbell, of Craigie, had intended being present to give an account of some of his experiments which had not proved so successful as he expected. Mr. Fleming, of Barrochan, had published some results from the application of saline manures, and Mr. Campbell tried them on a farm of his in the neighbourhood of Ayr, and he informed him (Mr. A.) yesterday that the experiments had failed. He was not surprised at this, considering that the land on which the experiments were tried was so near the sea. He had tried the same experiments on a farm 5 miles from the sea, and 500 feet above it. He had salted the soil till it was almost poisoned, and yet he found that what had cost him 4s., sometimes returned him as much as £4.

Mr. Colquhoun, of Killermont, said they had already heard what could be done by perseverance. It is the duty of the landlords to make the experiments; they are somewhat expensive, and often fail at a first trial, and the owner of the soil, who is ultimately to be the gainer, should pay the expense. He had on this point said to an individual, you seem to make no experiments in your business, and yet you are getting rich: while there is another individual, your neighbour, who makes many experiments, but continues poor. He admitted the fact; but the secret was, that nine out of ten of the experiments failed, and when the tenth succeeded, he availed himself of it, and so saved the expense. He hoped the landlords would take a lesson from this; he trusted they, with the assistance of Professor Johnston, would make the experiments, and allow the farmers to profit by those which had proved successful. In Buteshire a small sheet was published, containing the results of some experiments, and it had done much good. Sir Wm. Napier had got a sheet with the results of Mr. Fleming's experiments, which were very clearly and plainly brought out, and not fewer than 60 farmers applied for the loan of it in one fortnight, and when it was returned, the thumbing it had got showed that some good use had been made of it. Science was of the greatest importance in agriculture, but to make it available generally it must be plainly illustrated and brought to the farmer's hearth. The information conveyed in the *Quarterly Journal* was not calculated for plain practical farmers: it was too puzzling for them; it should be made as plain as possible; it could not be made too plain. One soil required one mode of application, while another required a different mode; but to make the instruction available to the farmer it must be made plain to every capacity.

Earl Cathcart said that in regard to the dissemination of scientific agricultural information by means of lectures, no one who had heard the lecture of yesterday could doubt the benefit of that mode of instruction. He felt a deep interest in agricultural chemistry; it was a new march in science, and he hoped it would be successful.

Sir Charles Fergusson referred to the amount of encouragement which had been given by persons of influence, in order to give effect to scientific agriculture. By improving agriculture, the general interests of the country were improved. It was for the landlords to do the work, and for the farmers to reap the benefit. The circulation of Professor Johnston's Catechism, and other works, joined to his lectures, would produce immense benefit.

Mr. Girdwood, from Bute, said a small sheet had been for some time past published by the Bute Farmers' Society, and was very generally read by the farmers. It had excited great interest and curiosity, and induced them in many cases to put their thoughts on paper, and on the whole had done great good in the district.

Sir Robert Bateson expressed his gratification at the great good which had been done by the Highland Society of Scotland, and in nothing did they deserve greater credit than in their patronage of lectures on agricultural chemistry. He was connected with one agricultural association, and he was astonished at the benefit which had resulted from it. It had not only been of use to the merely practical farmer, but, at the same time, to the experimental farmer, by enabling him to obtain the experience of others as a guide. It had also created a new era in the collection of manures and their management, and a vast amount of practical good had resulted.

Professor Johnston said, that the varied information already laid before them, and the shortness of the time allowed them, must be his apology for the brevity of his remarks. The chairman had well explained the available resources of the country, and the belief of practical men as to the capabilities of the soil. He (Mr. J.) could speak from the experience of personal observation in various parts of Scotland, through which he had been travelling for the last month; and although he did not hold the opinion before, he now believed that the produce of Scotland could be easily doubled. It was not long since he had turned his attention to this subject, although he had read Mr. Alison's remarks many years ago, that the soil was capable of producing the double of the present crops. Though he had studied the theoretical part of the subject, he had not studied the other part, and thought there might be exaggeration. But the journeys he had made had forced the opinion on him, and he avowed himself a convert to Mr. Alison's opinions. The soil might be improved and the crops greatly enlarged, in such a way as to produce much greater profit to the farmer. If there was no additional profit, there would be no inducement for practical men to do what is requisite. It was undoubted that the application of science to the soil will greatly increase the farmer's profits; but unless the Scottish farmer was put into possession of the knowledge necessary for the proper application of science—not merely a practical knowledge of agriculture, for in that they excelled—they could not profit by it. They should, as far as possible, promote the formation of clubs, meetings for lectures, and the circulation of practical papers. There were great difficulties to be overcome, and few had such opportunities as he had of seeing them. There were prejudices in some, want of perception in others, and a thousand causes operating to interfere with the progress of the science. It was, however, necessary, that the landlords should do something. They might be, in some cases, lukewarm, but we can find means of producing an impression upon through the press, a portion of which was now present, and ready to act with them. Zealous as the press was in regard to commerce, it was also the promoter of agriculture, and it could be opened on the landlords. In whatever nook of the country the lukewarm might be, the press would reach them. This was the moral influence to which he looked as the greatest means of bringing about the full development of the resources of the country. of the tenant was at the expense of the improvements, by the end of the lease he might become careless, and therefore the landlord ought to be at the principal expense of the experiments on the soil. He, therefore, hoped the moral means he referred to, and other means, would have the proper effect upon them. Will you, gentlemen, lend me your assistance? He spoke merely as the organ of the association, and told them what the association wished. If he could only persuade six persons at each of his lectures to take a lead in adopting the new mode of culture, he would be satisfied of the certainty of accomplishing great good. Surely he might expect ten out of this large company.

Mr. D. Mylne then proposed a vote of thanks to Sheriff Alison, for his conduct in the chair, and the meeting soon afterwards broke up.

The Show.

The show-ground embraced the High Green, the King's Park, and the Fleshers' Haugh, by far the most extensive exhibition field which has ever been occupied by the society for a similar purpose. It is also most beautiful and picturesque, being a luxuriant grassy sward, fringed to a great extent, and also dotted here and there with clumps of fine old trees, while the open side forms a bend, which is washed by the waters of the Clyde. The ladies' gallery, below which were the committee and judges' rooms, occupied the upper side of the grounds, beyond which was a powerful and beautiful *jet d'eau*, erected at the sole expense and supplied free of charge by the Glasgow Water Company. Further on was a tent from which the band of the 87th sent its enlivening strains; and on various parts of the green were dispersed beautiful vases and pieces of statuary. Water-pipes were also laid throughout the grounds, from which water was amply supplied to the beasts.

The morning gave promise of sunshine and a dry atmosphere, but shortly after ten o'clock showers began to fall, which continued heavily at intervals during the greater part of the day; and crowded as the exhibition continued to be from its opening to the close, still the receipts would have been larger had the weather been more favourable.

This may be considered the largest, and in all likelihood the best show ever held under the auspices of the Highland and Agricultural Society. The lots entered amounted to 1404; the exhibition which comes nearest to it being that of Edinburgh in the autumn of 1842, when 1014 lots were shown. Of the short-horned breed there were 29 bulls and 15 cows; of Ayrshires 61 bulls and 99 cows; and of the West Highland

16 bulls exhibited. The horses probably realized the anticipations of all. In the class of stallions not exceeding 8 years old there were 23 competitors. Of draught and brood mares there were 45 competitors. The show of fillies and colts was good. In the class of pairs of horses of any age adapted for agricultural purposes, there were 8 competitors; and 6 competitors for the prize to the best two cart horses or mares which have been worked in the streets of Glasgow.

The entries for sheep were exceedingly numerous when we consider that the West of Scotland is not remarkable for the extent of its sheep-walks. A pair of South American alpacas, accompanied by a young one, were also exhibited, and attracted much observation.

In the class of swine there were some good animals. In the large breed, some of the sows were estimated to weigh 50 stones. Of the small breed some tolerably handsome animals were shown.

The show of dairy produce was altogether a most magnificent affair. For cured butter there were 83 competitors; and for fresh butter exhibited by an individual from the farm, 101 competitors. In the various departments of cheese-making there were 98 competitors, some of the lots being really of first-rate quality.

In the class of extra stock Lord Belhaven exhibited a pair of the white aboriginal cattle of Scotland, which attracted much interest, as the representatives of a breed now fast passing away.

In the department of seeds, grasses, roots, and plants, there was a most excellent assortment, which did great credit to the various competitors; and the exhibition of implements was much more extensive than at any previous meeting in the West of Scotland.

The following is the official List of Prizes agreed on by the judges:—

CATTLE.

Short-horned Breed.

Class 1.—For the best bull, calved after 1st January, 1840, the premium of £40, to John Hunt, Esq., Thornington, Wooler. For the second best ditto, £25, to John Millar, Esq., of Ballumbie, county of Forfar. The honorary silver medal, to Mr. Crofton, Holywell, county of Durham, as the *breeder* of the best.

2.—For the best cow, £15, to the Duke of Buccleuch. For the second best ditto, £10, to Sir Thomas Joseph de Trafford, of Trafford Park, county of Lancaster.

3.—For the best heifer, calved after 1st January, 1842, £10, to W. R. Ramsay, Esq., M.P., of Barnton. For the second best ditto, £7, to Colonel James Dalgairns, of Balgavies, county of Forfar.

4.—For the best heifer, calved after 1st January, 1843, £10, to Mr. Thomas Simson, Blainslie, county of Roxburgh. For the second best ditto, £7, to Mr. James Burnett, Aberlady, county of Haddington.

5.—For the best two oxen, calved after 1st January, 1841, £15, to Mr. John Dudgeon, Musselburgh, county of Edinburgh. For the second best ditto, £10, to Mr. Robert Dudgeon, Humbie, county of Linlithgow.

6.—For the best two oxen, calved after 1st January, 1842, £10, to Mr. Robert Dudgeon. For the second best ditto, £7, to Mr. James A. Venor, Hilhead, county of Edinburgh.

AYRSHIRE BREED.

7.—For the best bull, calved after 1st January, 1840, £30, to Mr. Robert Paton, Cloberhill, county of Dumbarton. For the second best ditto, £20, to Mr. David Buchanan, Muckcroft, county of Lanark. For the third best ditto, £10, to Mr. Alexander Miller, Highmains, county of Dumbarton. The honorary silver medal, to Mr. William Brodie, Lochwinnoch, as the *breeder* of the best.

8.—For the best bull, calved after 1st January, 1842, £20, to Mr. James Mather, Inches, county of Renfrew. For the second best ditto, £10, to Mr. James Peattie, Knowhead, county of Stirling. For the third best ditto, £7, to Mr. Robert Logan, Westmains, county of Ayr.

9.—For the best cow in milk, £20, to Mr. Lawrence Drew, Carmyle. For the second best ditto, £10, to Mr. William Peter, Temple, county of Dumbarton. For the third best ditto, £7, to Mr. John Macadam, Ballindalloch, county of Stirling.

10.—For the best cow in milk, calved after 1st January, 1841, £10, to Mr. John M'Farlane, Blairnavaid, county of Stirling. For the second best ditto, £5, to Mr. Alexander Galbraith, Kilwinnet, county of Stirling. For the third best ditto, £3, to Mr. Alexander Purdie, Milland, county of Lanark.

11.—For the best three cows in milk, bred and reared by the exhibitor, £10, to Mr. John Anderson, Gartnod, county of Lanark. For the second best ditto, £5, to Mr. William Hunter, Montfod, county of Ayr.

12.—For the best three cows in milk, the same having been stall-fed and had a calf, at least six months previous to the 1st of August, 1844, their appearance as to milk, and their condition as to fat, to be taken into consideration—£10, to Messrs. Alexander M'Lachlan & Son, Gorbals, Glasgow.

13.—For the best heifer, calved after 1st January, 1842, bred and reared by the exhibitor, £10, to Mr. William A. Boyd, Townend, county of Ayr. For the second best ditto, £7, to Mr. William Paterson, Cairnbog, county of Stirling. For the third best ditto, £5, to Mr. John Waugh, Westside, county of Lanark.

14.—For the best three heifers, calved after 1st January, 1842, £10, to Mr. Gabriel Dunlop, Peacock Bank, county of Ayr. For the second best three ditto, £5, to Mr. William Muir, Hardington Mains, county of Lanark.

15.—For the best two oxen, calved after 1st January, 1840, £10, to William Murray, Esq., of Polmaise, county of Stirling.

WEST HIGHLAND BREED.

16.—For the best bull, calved after 1st January, 1840, £30, to Mr. Alexander G. Morrison, Salachan, Ardgower, county of Argyle. For the second best ditto, £20, to William A. Campbell, Esq., of Ormsary, county of Argyle. For the third best ditto, £10, to Mr. Alexander Cameron, Inverconerie, county of Perth. The honorary silver medal to Mr. Alexander Morrison, as *breeder* of the best.

17.—For the best bull, calved after 1st January, 1842, £10, to Messrs. Stewart, Glenfinlass, Callandar, county of Perth. For the second best ditto, £7, to the Marquis of Breadalbane. For the third best ditto, £5, to the Marquis of Breadalbane.

18.—For the best cow which has reared a calf during the season of the show, £15, to the Duke of Sutherland. For the second best ditto, £7, to Mr. William Grant, Ruthven, county of Banff. For the third best ditto, £5, to the said Mr. William Grant.

20.—For the best heifer, calved after 1st January, 1842, bred and reared by the exhibitor, £7, to Mr. Donald M'Laren, Glenertnay, Callander, county of Perth. For the second best ditto, £5, to the Marquis of Breadalbane.

21.—For the best three heifers, calved after 1st January, 1842, £7, to the Marquis of Breadalbane. For the second best three ditto, £5, to Neill Malcolm, Esq., of Poltalloch, county of Argyle.

22.—For the best two oxen, calved after 1st January, 1840, £10, to Archibald Stirling, Esq., of Keir, county of Perth. For the second best two ditto, £5, to Neill Malcolm, Esq., of Poltalloch.

23.—For the best two oxen, calved after 1st January, 1841, 10*l*, to Archibald Stirling, Esq., of Keir. For the second best two ditto, 5*l*, to ditto.

24.—For the best two oxen, calved after 1st January, 1842, £10, to Neill Malcolm, Esq., of Poltalloch. For the second best two ditto, £5, to Mr. Donald M'Laren, Glenertnay, Callandar.

25.—For the best two oxen, calved after 1st January, 1841, which have not been housed or confined in a straw-yard since Whit Sunday, 1842, £10, to the Duke of Sutherland.

Galloway, Angus, and Aberdeen Polled Breeds.

27.—For the best two oxen, calved after 1st January, 1840, £15, to Robert Lyall, Esq., Old Montrose, county of Forfar. For the second best two ditto, £10, to James M'Douall, Esq., of Logan, county of Wigton. For the third best two ditto, £5, to ditto.

28.—For the best two oxen, calved after 1st January, 1841, £15, to Mr. John Collier, Panlathy, county of Forfar. For the second best two ditto, £10, to Mr. Robert Lyall, Old Montrose.

Fife Breed.

29.—For the best two oxen, calved after 1st January, 1840, £10, to Mr. David Wallace, Balgrumme, county of Fife.

Any Breed.

30.—For the best two oxen, pure or cross, calved after 1st January, 1840, £15, to Archibald Stirling, Esq., of Keir.

31.—For the best ox, pure or cross, calved after 1st January, 1840, £10, to Mr. William Christie, Markle, county of East Lothian.

32.—For the best dairy cow, £10, to Mr. Lawrence Drew, Carmyle, county of Lanark. For the second best ditto, £5, to Mr. John Brock, Barns of Clyde, county of Dumbarton.

HORSES.

Class 1.—For the best cart stallion for agricultural purposes, not exceeding 8 years old, £40, to Mr. Samuel Clark, Mansurie, county of Renfrew. For the second best ditto, £25, to Mr. Robert Park, Glenshinnoch, county of Renfrew. For the third best ditto, £15, to Mr. Robert Bowie, Gilmedland, county of Stirling.

2.—For the best draught mare for agricultural purposes, 25*l*, to Mr. John M'Farlane, Blairnavaid, county of Stirling. For the second best ditto, 15*l*, to Mr. John Bartholomew, Broomhill, county of Dumbarton. For the third best ditto, 7*l*, to Mr. Robert Murdoch, Easthaughhead, county of Lanark.

3.—For the best brood mare, having had a foal in 1844, 10*l*, to Mr. Andrew Stewart, Kennyhill, county of Lanark. For the second best ditto, 5*l*, to Mr. Alexander Galbraith, Croycunningham, county of Stirling.

4.—For the best entire colt for agricultural purposes, foaled after 1st January, 1841, 15*l*, to Mr. John Erskine, Burntshields, county of Renfrew. For the second best ditto, 7*l*, to Mr. Thomas Bowman, Hallhill, county of Lanark.

5.—For the best ditto, foaled after 1st January, 1842, 10*l*, to Mr. Matthew Young, Knockendall, county of Ayr. For the second best ditto, 5*l*, to Mr. John M'Farlane, Blairnavaid, county of Stirling.

6.—For the best ditto, foaled after 1st January, 1843, 5*l*, to Mr. Thomas Bowman, Hallhill.

7.—For the best gelding for ditto, foaled after 1st January, 1841, 10*l*, to the said Mr. Matthew Young, Knockendall.

8.—For the best filly for ditto, foaled after 1st January, 1841, 15*l*, to Mr. William White, Weston, county of Lanark. For the second best ditto, 7*l*, to Mr. John Anderson, Gartnod, county of Lanark.

9.—For the best ditto, foaled after 1st January, 1842, 10*l*, to Mr. William Muir, Hardington Mains, county of Lanark. For the second best ditto, 7*l*, to Mr. Robert Findlay, Springhill, county of Lanark.

10.—For the best ditto, foaled after 1st January, 1843, 5*l*, to Messrs. Robert and Thomas Jackson, Stanley Muir, county of Renfrew.

11.—For the best pair of horses or mares, of any age, adapted for agricultural purposes, 10*l*, to Mr. Andrew Wallace, Torryglen, county of Lanark. For the second best pair of ditto, 5*l*, to David Robert C. Buchanan, Esq., of Drumpeller, county of Lanark.

12.—For the best two cart horses or mares, the same having been in the possession of the exhibitor, and chiefly worked upon the streets of Glasgow, anywhere within the Parliamentary boundaries, for one year previous to the show, to be exhibited in the harness in common use for the preceding month, and by the driver, 10*l*, to Mr. William M'Culloch, Glasgow. For the second best ditto, 5*l*, to Messrs. John Bartholomew & Co., Glasgow. The silver medal to each of the drivers of the said horses.

13.—For the best cart horse or mare, the same having been in the possession of the exhibitor, and driven by himself chiefly upon the streets of Glasgow, anywhere within the Parliamentary boundaries, for one year previous to the show, to be exhibited in the harness in common use during the preceding month, and by the owner, 10*l*, to Mr. Matthew Smellie, 221, Argyll Street, Glasgow.

SHEEP.

Black-faced Breed.

Class 1.—For the best three tups, not exceeding forty-five months old, 15*l.*, to Mr. David Foyer, Knowhead, county of Stirling. For the second best three ditto, 10*l.*, to Mr. William Gillespie, Gateside, county of Lanark. For the third best three ditto, 5*l.*, to Mr. Thomas Gillespie, Parkhall, county of Lanark.

2.—For the best pen of five ewes, not exceeding 5 years and 7 months old, selected from a regular breeding stock of not fewer than a hundred, and the pen having reared lambs for three months during the season previous to the show, 10*l.*, to Mr. William Gillespie, Gateside. For the second best pen of five ditto, 5*l.*, to Mr. David Foyer, Knowhead.

3.—For the best pen of five gimmers, 10*l.*, to Mr. David Foyer. For the second best pen of five ditto, 5*l.*, to Mr. John Watson, Nisbet, county of Lanark.

4.—For the best pen of five dinmonts, 10*l.*, to Mr. Thomas Murray, Brenchoilly, county of Argyle. For the second best pen of five ditto, 5*l.*, to Mr. Malcolm Coubrough, High Craigton, county of Dumbarton.

5.—For the best pen of five tup lambs, 7*l.*, to Mr. William Gillespie, Gateside. For the second best pen of five ditto, 5*l.*, to Mr. David Foyer, Knowhead.

6.—For the best pen of five wethers, not exceeding 3 years old, 5*l.*, to Mr. John Phillips, Laighpark, county of Dumbarton.

7.—For the best pen of five wethers, not exceeding 3 years old, fed exclusively on hill pasture since 12 months old, 5*l.*, to Mr. David Scott, Northfield, near Edinburgh, For the second best pen of five ditto, 3*l.*, to said Mr. Malcolm Coubrough, High Craigton.

8.—For the best pen of five wethers of any age, showing the most symmetry, fat, and weight, 5*l.*, to Mr. David Scott, Northfield. For the second best pen of five ditto, 3*l.*, to Mr. John Phillips, Laighpark.

9.—For the best pen of five ewe lambs, 7*l.*, to Mr. William Gillespie, Gateside. For the second best pen of five ditto, 5*l.*, to Mr. David Foyer, Knowhead.

Cheviot Breed.

10.—For the best two tups, 10*l.*, to Sir Graham Montgomery, Bart., of Stanhope, county of Peebles. For the second best two ditto, 7*l.*, to Mr. Alexander Murray, Hearthstone, county of Peebles. For the third best two ditto, 5*l.*, to Mr. James Brydon, Moodlaw, county of Dumfries.

11.—For the best shearing tup, 7*l.*, to Mr. Alexander Craig, Bighouse, county of Sutherland. For the second best ditto, 3*l.*, to ditto.

12.—For the best pen of five ewes, 7*l.*, to Sir Graham Montgomery, Bart., of Stanhope. For the second best pen of five ditto, 3*l.*, to Mr. Alexander Craig, Bighouse.

13.—For the best pen of five gimmers, 7*l.*, to Mr. James Brydon, Moodlaw. For the second best pen of five ditto, 3*l.*, to Mr. Alexander Denham, Baitlaws, county of Lanark.

Leicester Breed.

15.—For the best tup, not exceeding 45 months old, 10*l.*, to Mr. William Smith, Burton, county of Northumberland. For the second best ditto, 5*l.*, to Mr. John Wallace, Banbeath, county of Fife.

16.—For the best pen of three ewes of any age, 5*l.*, to Mr. Hugh Wats[illegible], Keillor Farm, county of Forfar.

19.—For the best pen of three tup lambs, 3*l.*, to Mr. John Brodie, Abbey Mains, county of Haddington.

20.—For the best pen of three ewe lambs, 3*l.*, to said Mr. John Brodie, Abbey Mains.

Southdown Breed.

21.—For the best tup, 15*l.*, to the Duke of Richmond. For the second best ditto, 10*l.*, to Mr. Hugh Watson, Keillor Farm.

22.—For the best pen of five ewes, 10*l.*, to the Duke of Richmond. For the second best ditto, 5*l.*, to Mr. Hugh Watson, Keillor Farm.

Crosses.

25.—For the best pen of five dinmonts, cross between Leicester tup and black-faced ewe, 5*l.*, to the Duke of Montrose.

ALPACAS.

To A. Gartshore Stirling, Esq., of Craigbarnet, for two alpacas, and a young alpaca, their produce, bred by exhibiter, a premium of 5*l.*, and a honorary silver medal. A picture of a young animal recommended to be taken.

SWINE.

Class 1.—For the best boar, large breed, 4*l.*, to William Campbell, Esq., of Ederline, county of Argyle. For the second best ditto, 2*l.*, to Mr. Walter Burnside, New City Road, Glasgow.

2.—For the best sow, large breed, in pig or milk, 4*l.*, to Mr. Robert Hewitson, Auchenbenzie, county of Dumfries. For the second best ditto, 2*l.*, to Mr. Colin Campbell, of Colgrain.

3.—For the best boar, small breed, 4*l.*, to Mr. John Bartholomew, Broomhill, county of Dumbarton. For the second best ditto, 2*l.*, to Mr. James Burnett, Aberlady, county of Haddington.

4.—For the best sow, small breed, in pig or milk, 4*l.*, to Mr. Hope Hunter, Craighead, county of Lanark. For the second best ditto, 2*l.*, to North Dalrymple, Esq., of Fordel and Cleland.

DAIRY PRODUCE.

1.—CURING BUTTER.

Class 1.—To the owner of any dairy in Scotland, who shall have made and cured, during the season 1844, and shall exhibit at the show, the best quality of butter for the market, the quantity made and cured not being less than 2 cwt., 10*l.*, to Mr. John Watson, Nisbet, Lanarkshire. For the second best quality, 7*l.*, to Mr. James Wilson, Auckaleck, Argyleshire. For the third best quality, 5*l.*, to Mr. Alexander Buttery, Airdrie, Lanarkshire. A medal to Mr. Alexander Aikenhead, Barskevein, Renfrewshire.

2.—For the best fresh butter, to be exhibited in samples, consisting of three rolls of 1 lb. weight each, and by an individual from the farm of which it is the produce, 3*l.*, to Mr. James Maclean, Braidwood, near Edinburgh. For the second best ditto, 2*l.*, to Mrs. John Hunter. For the third best ditto, 1*l.*, to the Duke of Montrose.

2.—MAKING CHEESE.

3.—To the person in Scotland who shall produce the best specimen of sweet or full milk cheese, made in 1844, of any variety that he shall find most profitable for the market, the quantity not being less than 2 cwt. of 112 lbs., 16 oz. to the lb., 10*l.*, to Mr. Gavin Rowat, Bonnanhill, Lanarkshire. For the second best quality, 7*l.*, to Mr. Hugh Watt, Knocklandside, Ayrshire. For the third best quality, 5*l.*, to Mr. James Wilkie, Craignethan, Lanarkshire.

4.—To the person in Scotland who will produce the best specimen of sweet or full milk cheese, made previous to the year 1844, of any variety that he shall find most profitable for the market, the quantity not being than 2 cwt. of 112 lbs., 16 oz. to the lb., 10*l.*, to Mr. William Kerr. Barroger, Ayrshire. For the second best quality, 7*l.*, to Mr. Hugh Borland, Westerhill House, Ayrshire. For the third best quality, 5*l.*, to Mr. John Ross, Titwood, Ayrshire.

5.—To the owner of any dairy in Scotland who shall have made for sale, during the season 1844, the best quality of cheese from skimmed milk, not being less than 2 cwt., 5*l.*, to Mr. William Hamilton, Pirsiland, Biggar. For the second best quality of ditto, 3*l.*, [illegible] Mr. James Allan, Whitehill.

IMPLEMENTS AND MACHINES.

Class 1.—For the best collection of agricultural implements and machines, of any description, manufactured by, or under the superintendence of the exhibiter, just proportion of parts, workmanship, utility, and price, being considered, 10*l.*, to Mr. Robert Law, Shettleston, Glasgow, for the best collection; 5*l.* to Mr. James Wilkie, Uddingstone, for best workmanship, &c.

2.—For any new and useful agricultural implement or machine that has been satisfactorily tested in actual work, not previously exhibited in competition, 7*l.*, to Mr. Andrew M'Kerrow, Kilmarnock, for his antler plough; and 3*l.* to Mr. John West, Lundie, for plough with apparatus for lifting potatoes.

4.—For any useful improvement in the construction of subsoil ploughs, 5*l.*, to Mr. James Wilkie, Uddingstone, for subsoil plough with improved share.

5.—For any useful improvement in the construction of the common two-horse plough, which has for its object the lifting and turning over the greatest possible quantity of soil in a given time, with the least resistance to the draught, and which produces, at the same time, a fair and efficient surface for exposure or for seed, 7*l.*, to

Messrs. Robert Gray and Sons, Uddingstone; and three sovereigns to Mr. James Wilkie.

6.—For any useful improvement in the construction of barn fanners, 5*l.*, to Mr. William Ralston, Musselburgh.

7.—For any useful improvement in farm carts and wheels, 5*l.*, to Mr. Robert Crawford, Uddingstone.

8.—For any useful improvement in the threshing machine, 7*l.*, to Mr. David Craig, Stewarton.

9.—For the most useful improvement in the construction of any of the implements used in the cultivation of the turnip and potato crops, 5*l.*, to Mr. James Wilkie; 2*l.* to Mr. Alexander Reid, Stewarton; and 2*l.* to Mr. John M'Gill, Sundrum.

10.—For the most useful improvement in any of the utensils or machines used in dairy husbandry, 5*l.*, to Mr. Robinson, Lisburn, Ireland; and 2*l.* to Mr. Richmond, Salford.

11.—For the most successful introduction of any machine or implement that is generally approved of in the practice of agriculture in England or elsewhere, or a modification of the same, and which has hitherto been but little known or employed in Scotland, 5*l.*, to Mr. William Crosskill, Beverley; and a silver medal to Mr. Houston, Johnstone Castle.

12.—For a weighing machine, adapted to general farm purposes, capable of weighing stock or produce, dead or alive, from the weight of a sheep to that of a loaded cart, and which will indicate the addition of one-thousandth part of the mass to be weighed, 5*l.*, to Mr. Thomas M'Cririck, Garallan.

13.—For any improved method, whether patented or not, of manufacturing drain tiles or pipes, whereby the price will be reduced; the tiles or pipes to possess the requisite qualities of usefulness and durability, and satisfactory evidence as to the price to be produced, 10*l.*, to Mr. Etheridge, Southampton.

14.—Besides the above the judges awarded various premiums in money and medals for articles not within the range of those specified.

The Dinner.

The great dinner of the society took place in the City Hall, the company assembling at half-past five o'clock. About 1200 sat down, which is a much smaller party than was anticipated, or, indeed, than has been usual; but the uncomfortable nature of the day sent many hundreds home who would otherwise have remained. The Duke of Richmond, the president of the society, filled the chair.

As is usual at the general dinners of the national societies, the speeches were not of a very practical nature.

FRIDAY, August 9.

This morning, at ten o'clock, a breakfast ordinary took place at the Trades' Hall, his Grace the Duke of Montrose in the chair. The number present altogether amounted to about 250. Immediately after breakfast, Mr. Smith, of Deanston, commenced a lecture on draining, which was listened to with great interest to the close, when a vote of thanks being tendered to him, the meeting separated.

Exhibition of Prize Stock, &c.

According to previous arrangement, an exhibition of the stock which had gained prizes, of implements, and other articles, took place upon the show-ground on the green to-day, commencing at eleven o'clock. The prize animals were all passed over the platform in front of the ladies' gallery, after which they were driven off by their respective proprietors.

AGRICULTURAL EDUCATION.

A very interesting meeting was held to-day, at two o'clock, in reference to this important subject, in the Merchants' Hall, which was most respectably attended. The object of the meeting having been explained by Professor Johnston to be to take into consideration the desirableness and practicability of giving to the rural population of this country elementary instruction in agriculture,

Mr. Skilling, from the model farm near Dublin, addressed the meeting, and explained in detail the principles upon which the farm under his management was conducted, and showed the perfect success which the experiment of model farms in Ireland, both in affording agricultural instruction to those who required it, and in demonstrating that farms conducted on the most approved principles of agriculture could not only afford to pay rent, but a greater amount of rent than could be derived from them in ordinary circumstances.

Mr. Kilpatrick then read some extracts from reports of the Commissioners of Education in Ireland, expressive of their opinion as to the great advantages which had been derived from such institutions.

Five boys, pupils at the agricultural school at Larne, in Ireland, were then brought forward for the purpose of being examined as to the amount of information which they had derived on agricultural subjects from attending that school. They were examined in the first place by Mr. Gibson, Government Inspector of Schools in Scotland, as to their proficiency in the ordinary branches of education, to show that that had not been neglected in the acquirement of agricultural knowledge. Professor Johnston then examined them as to the composition of soils, the food of plants, &c.; Mr. Finnie, of Swainston, as to the rotation of crops; and Mr. Alexander as to the feeding of cattle; on each of which subjects they acquitted themselves with great credit.

A long conversation then ensued, having reference principally to the practicability of engrafting upon the present parochial system of Scotland a plan of agricultural education, similar to that which was being successfully introduced into the government schools in Ireland.

Principal Macfarlan, in an admirable address, then moved the following resolution, namely,—That it is desirable, in the opinion of this meeting, that elementary instruction should be afforded to the rural population of this country.

The motion was unanimously approved of, and a committee appointed to carry it into practical effect.

PROTECTION AGAINST THE ADULTERATION OF ARTIFICIAL AND OTHER MANURES.

It was once vainly imagined that agriculture never would derive any real benefit from chemistry; and the pens of powerful writers, and skilful agriculturists withal, contributed to keep up the delusion. But that delusion is totally dispelled; men now see more clearly, and chemistry is deservedly triumphant.

We have nobody to thank for this but the professors and advocates of chemistry, who have fagged hard to convince the very people who were to be benefited, that it was for their good they were labouring. Such a thing appeared preposterous, and. for a time, was so treated; but facts were gradually developed by that science which could not be withstood. The case was now, therefore, somewhat altered, conviction seized individuals who had hitherto been remarkable for the vehemence of their conduct on the opposite notion, converts became numerous, and wonder is even expressed that any rational being should have been obtuse on a subject which appears so very clear!

Now there is no point on which chemistry has more strongly proved itself the farmer's friend than on the subject of manures; a point on which even the most ignorant cultivator of the earth could be convinced and even astonished. The pecuniary benefits, therefore, which must arise to the agricultural interest from attention to this alone, are of a most formidable amount; and that interest ought to show its gratitude to its chemical friends, by fully availing itself of the valuable knowledge which has been so lavishly poured forth.

Chemistry has doubtless eased the minds of many farmers, who, though wanting something of the kind, durst not then depend upon it. Although they must frequently have suspected that their artificial manures were adulterated, still they had no means of proving it. They had seen chemistry laid down in such difficult and multitudinous terms, that they were afraid even to think of it, much less to seek its aid; and, accordingly, they could not comprehend how it could minister to their wants. But it has been shown to them in terms which cannot be mistaken, that the constituents of both artificial and natural manures, soils, seeds, grasses, roots, &c., can be determined with accuracy sufficient for all the purposes of the cultivator; and much need have they to rejoice at the discovery, and to be thankful that they are in *a measure* secured from the depredations of unprincipled adulterators of and dealers in artificial and even natural manures.

But, I repeat, farmers are only in "a measure" secured; for, what is the value of the discovery to them, if they refuse to profit by it? Why, nothing; and it is provoking even to suppose that such ever could be the case. Facts relative to agriculture, however, have been published often and often again, and the publishers have had the annoyance of seeing them comparatively unnoticed; therefore, with such knowledge before me, I am somewhat apprehensive that the information will not be valued and used as it deserves.

The immense sums of money expended every year in the purchase of manures show the importance of the subject, and the necessity of the agricultural interest adopting protective measures. Nothing is more commonly or plainly spoken of than the barefaced manner in which manures are adulterated and foisted on the unsuspecting farmer as genuine; and the amount of toleration with which such transactions are permitted, excites the universal contempt of men in other lines of business, who vainly puzzle their wits to account for it.

Now I suppose there is scarcely an agricultural publication or newspaper in the country that has not endeavoured to warn the farmers, and suggested to them the necessity of combinations, that they might check the evil, and do justice to themselves. It was even stated in the papers that at the last meeting of the Royal Agricultural Society of England, at Southampton, it was intended to form a protective society against the manure impostors; but so far as I have seen of the proceedings at that place, I am unable to discover any allusion even to the subject. If, then, nothing is yet done towards realising the object, *is nothing to be done?*

The object might be accomplished in a variety of ways, either by agricultural societies, or by combinations of private individuals; I should, however, give the preference to the agricultural societies. Now it is admitted by many that the premiums for improving stock are in almost all cases too heavy, and however improvement advance, there still is no diminution in them. Surely there are objects of as much importance to agriculture generally as the mere breeding and rearing of stock, and which, lightly thought of, are omitted from the premium-sheets of many of the local societies. I imagine I could (and may at at another time) point out several, but as my present intention will have been learnt from the title of this paper, to that alone I confine my remarks. In the first place, then, let a portion of the funds of all local agricultural societies be reserved for the important purpose of enabling the members to obtain unadulterated manures. These funds would be required for the payment of analyses, or, what would be rather better, for the payment of a chemist, which every society should have; for the prosecution of dishonest dealers; and for the dissemination of information which would be required and must be obtained.

The annual salary of a chemist will not amount to much; and that such a person should be attached to every agricultural society is a matter beyond question: no portion of its expenditure, would, in my opinion, be more wisely laid out, as, by following his advice, thousands of pounds would be saved in the purchase of manures alone. And, as most farmers are purchasers of manures, it may be asked if an object affecting the pockets of all to a serious extent, more so probably than any other, is unworthy the notice of such societies? In guano alone, it is a fact that no man who is not a chemist can rely on his judgment in selecting it; for though we have been advised that the most powerful kinds throw out very strong ammoniacal odours, even that with *no smell* is often rich in uric acid, the most valuable constituent in that manure; and hence the necessity of having a chemist to guide in the selection of that and all other manures liable either to be adulterated or which may be worthless in other respects.

So long as no means are adopted to secure genuine manure, so long will the dishonest dealer dupe his customers; but secure the services of a competent chemist, and follow his suggestions, and the mischief will be of short duration. For instance:—a farmer is in want of guano, and he goes and obtains samples from various dealers; these are submitted to the chemist, the best is determined, and the purchase is completed. But in order to guard against the chance of being duped by having another kind sent differing from the sample which determined his choice, he should take a sample from the bulk of the guano which he bought; and if his crops do not show the increased product which he ought to have had, or appear as if they had not been manured, then let him have the second sample analyzed, and if it prove deficient in the good qualities abounding in the first sample, let him proceed in an action at law against the unprincipled dealer.

For the sake of illustration we will suppose the preceding case to have occurred, the farmer being a member of an agricultural society. A short statement is then drawn up, which is printed and sent to every member of the society, and the transaction being made known to all, the dealer would meet his reward by the desertion of his customers. On the other hand, again, if the dealer proved himself a fair trader, the same publicity would be given, and his shop would be resorted to by all the members who wanted his genuine manures.

I shall not pursue the subject further; but I most strongly urge you to lay the question before the agricultural community, that it may have the consideration which it really deserves; and wishing your appeal may be successful, I beg to subscribe myself, yours devotedly,

July 18, 1844. W. Jackson.

TRANSACTIONS OF THE COUNCIL MEETINGS OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

[*Continuation of the Meeting of May* 29.]

Prize Essays.—Mr. Pusey, M.P., Chairman of the Journal Committee, reported to the Council the unanimous decision of the Judges, in assigning the Society's Prize of £50 for the best Essay on the Agriculture of Cheshire to Mr. William Palin, of Stapleford Hall, near Chester; and the liberality of Mr. John Arkell, of Hollow Farm, near Gloucester, who, in announcing himself as the author of one of the highly-commended Essays on the Discrimination of Soils, had presented his Essay to the Society for whatever use the Journal Committee might think proper to make of it, in promoting the object of the Society.

Shrewsbury Meeting.—The stipulations entered into by the authorities of Shrewsbury with the Secretary of the Society, in reference to the condition of the resolution at the last Monthly Council, deciding on Shrewsbury as the place of the annual country meeting of 1845, were laid before the Council, and having been read were unanimously adopted.

Dynamometers.—Mr. Clyburn, director of the Earl of Ducie's iron-works, in Gloucestershire, stated that one of his self-recording Dynamometers having been completed for the trial, was now forwarded to the Society, with printed instructions for its use: it would record a strain of draught up to 12 cwt. Its principle of action being self-recording, was different to that of other Dynamometers, the box containing the instrument being supported on wheels, which communicated, by their axle, a progressive revolution to the recording cylinder within it as the draught proceeded, and its registration was made continuously by the pencil moving over its ruled surface; the average amount of draught being obtained by inspection of the indications thus obtained of the momentary variations during any given time and space. The Dynamometer of Messrs Cottam and Hallen had also been duly forwarded for the trial. Mr. Slaney having informed the Council that he had tried a very simple and cheap Dynamometer, made by Messrs. Drummond, of Stirling, with very satisfactory results, the Council agreed to recommend the purchase of this instrument, at the next monthly meeting, for the purpose of adding it to the others for trial. The Council resolved, that, as much time and care would be required for the proposed investigation into the practical merits of these instruments, and the estimate of their relative value accordingly, the trial should be postponed until the autumn of the present year.

Destruction of Rats.—Captain Forbes, R.N., having called the attention of the Council to the damage and loss sustained by farmers, in consequence of the ravages effected by the common rat and other injurious animals, Mr Meyer addressed a letter to the Council on this subject. His chief secret consisted in the chemical nature of his compounds, and the knowledge of their proper application, employed by his father (a practical chemist in Germany) for thirty years, and by himself for twelve years; the peculiar action of the poison affecting the respiration of the animal and driving him from the house to seek the fresh air, such access of fresh air into the lungs only accelerating the fatal result. In a few days, any premises whatever could be thoroughly cleared of rats, and would remain so for a period varying from nine to fourteen months, according to circumstances. No poultry would be injured by the preparation used, and cats or dogs would be affected by only a temporary sickness. The remedy not only drove away the rats, but by its odour continued to have that effect for several months afterwards. It had the same influence over water-rats as the common rats on land. On the motion of Lord Portman, seconded by the Marquis of Downshire, the Council returned to Mr. Meyer their thanks for the communication with which he had then favoured them.

Analysis of Limestones and Marls.—Dr. Ure, having devoted much of his attention for many years to a general simplification of the apparatus required by practical persons in the processes of particular pursuits connected more or less with chemical science, attended the Council of the 29th of May, and favoured the members with the inspection of an apparatus similar in its object to that of Sir Humphrey Davy, but slightly modified in its construction. In order to prove its accuracy, Dr. Ure performed before the Council an experiment with 100 grains of pounded marble, explaining at each step of the process, the *rationale* of his proceeding. The equivalent amount of carbonic acid was almost immediately shown by the instrument. In reply to an inquiry by the President, Dr. Ure stated that the apparatus was capable of showing the presence and amount of the carbonate of magnesia contained in the magnesian limestones, but that a special scale would be required, and also a subsequent testing of the acid solution. Dr. Ure then presented to the Council six samples of real, or normal guano, all of which had been the subjects of his careful analysis. Guano being a substance undergoing slow but certain chemical change, the various cargoes brought to this country were as various as the conditions of time and climate could make them, and had never been imported in the original or normal condition in which the substances were voided by the sea-fowls furnishing the supply, richly charged with uric acid, the grand permanent pabulum of manure, which would give fertility for years, but in a state of putrefaction more or less advanced. Analyses spoke of ammonia and other results of that decomposition, but such compounds did not exist in the guano in its original state, as voided; while in other examinations of samples, it was found that all the uric acid and rich animal matter had become changed by heat and moisture, and all the azotized principle gone off in gas, nothing remaining but a carbonaceous residuum, of no comparative value. He had already presented to the Journal Committee a Paper, showing—1st. These changes of uric acid; 2nd. An account of guano in its fresh, decayed, or spurious state; 3rd. A detailed view of the new methods of chemical research, which after a period of twenty years' research, he had now brought to a practial result. The specimens of guano which he presented were the Bolivian, Chilian, Peruvian, and African. He obtained the Bolivian from Bolivia about a year and a-half ago; and because it gave no indications of the presence of ammonia, the cargoes were treated with perfect indifference by the merchants who had been accustomed to the article in its decaying state; but he found, that although as dry as Irish snuff, that invaluable guano was rich in uric acid and animal matter, and capable of producing 22 per cent of ammonia on its decomposition as a manure. It was highly valued by the natives, and they were so much averse to its leaving the country, that genuine cargoes were now difficult to obtain.

Draining Tiles and Tools.—Mr. Slaney reported to the Council the result of an inspection made by the Marquis of Downshire, the Hon. Mr. Clive, and himself, of Mr. Clayton's new machine for making pipe-tiles, at 21, Upper Park-place, Dorset-square. They were much struck with the simplicity, cheapness, and effective operation of the machine in question; and particularly remarked the recent improvement in it, by which the clay, in its transit through the cylinder to the die at the bottom, was made to pass through a sieve or strainer. This served to arrest any small stones or hard substances, which would otherwise have impeded the production of perfect pipes. A force of 25 lbs. on the winch sufficed to communicate, through the pinions and wheels, the requisite pressure to the piston; and so easy was the working the machine rendered by this multiplication of power, that a woman might be employed for the purpose. Mr. Clive thought that many clays might perhaps be worked through this machine without pugging. Mr. Pusey was of opinion that pipe-tiles were likely to come into general use, yet the members of the Society should exercise some caution in their proceedings. He had ordered one of Mr. Clayton's machines, but first thought it wise to send up some of his clay for trial, as he had two sorts. Neither of these clays were found to be suitable for pipes. On the other hand, the Speaker of the House of Commons had one of the same machines in use, which produced excellent pipes from his clay of the plastic kind. He particularly desired to call Mr. Parkes's attention to those points in the treatment of clays which bore on their necessary preparation for pipe machines, as also on the cost of burning pipes with coal. Mr. Pusey mentioned that he had heard from a Worcestershire farmer that pipes for drains had been successfully used for a longer period than had hitherto been imagined; but he had also heard of a case in which drains, formed of pipes and laid in very soft soil, had failed for want of a method of joining them; and he thought that in soft and irregular subsoils a means of junction was desirable. He had early suggested the employment of a short piece of pipe of a larger size, into which the ends of two smaller pipes might be inserted. Another method had been adopted by tapering one end of a pipe two feet long, so that it entered the larger end of another pipe; and so satisfied was a farmer, neighbour to the party whose drains had failed, of the sufficiency of this method, that he had ordered 100,000 of such pipes. Colonel Challoner desired to know from Mr. Parkes to what extent he considered the density of pipes ought to be carried, as he and others gathered from his previous remarks that Mr. Parkes attributed a considerable part of their action to their porosity and power of suction or absorption of water from the soil. Mr. Parkes stated, that some misapprehension of his meaning, on a former occasion, seemed to have arisen as to the amount of the action performed by a pipe in absorbing water from soil. The experiment alluded to related to the absorbing power of a pipe when immersed in water, and was cited as furnishing proof of porosity; but, under the circumstances in which pipes existed in drains, *i. e.*, embedded in earth, he conceived that, however wet the soil might be, a pipe would not be in a condition to absorb water so freely as in the experiment mentioned. It was easy to show, indeed it must be self-evident, that by far the greatest proportion of the water of drainage entered the conduit through the crevices between each pair of pipes. Nevertheless, he considered a certain degree of porosity to be a valuable property in a pipe, as the continued absorption of moisture must necessarily harden the floor of a drain, and dry the soil in immediate contact with the pipes, after the flow ceased; to this effect alone he intended his previous remarks to apply. It would be impossible to assign, theoretically, what might be the best practical degrees of density and porosity to be given to such an article as the drain-tile. It is probable that its durability, which was very important, would depend on the quality of the clay and its density combined. The old Roman bricks made in this country were well known to have possessed wonderful durability, and they were very dense compared with the more porous and perishable modern English bricks. Yet, even the Roman bricks absorbed water, and he thought it would be very difficult, even were it desirable, to compress clay into the shape of a small cylindric pipe so as to render it unabsorbent. In Mr. Clayton's machine, a pressure of about 60 lbs. per square inch acted on the surface of the clay in the cylinder, in order to express the pipes with sufficient celerity; and he had shown in a former report to the Society, that the Kentish pipes were denser than other machine-made tiles; also that those of the smallest bore and thinnest substance were denser than the larger and thicker pipes. He imagined that Mr. Clayton's machine would produce them yet denser than these, as he employed greater pressure and made them thinner than the old machine; but the density of a pipe would greatly depend on the texture and fineness of the clay employed in its manufacture. With respect to the importance of some kind of union between every pair of pipes, Mr. Parkes agreed with Mr. Pusey that such an arrangement was desirable for very soft bottoms, and absolutely necessary, in order to adapt pipes as conduits in spouting sands, &c.; but he preferred, for such cases, the inserting an inch bore or other sized pipe, according to the discharge required, a few inches into a full-length pipe of a larger size, easily fitting, rather than the using short pieces to form a joint. By the former plan a great length of pipes could be put together on the surface, and then be let down into the prepared trench, where they would repose on the whole length and have the full bearing of the larger pipes, instead of resting on short pieces. Such a chain of pipes could never sink in places—the whole length must sink together, and equally, or not at all. Excepting, however, in very difficult cases, he did not think a joint necessary, if the trench were correctly formed, as before explained. Simple means may be often used to render a soft bottom firm. He instanced Mr. John Taylor, of Mereworth, Kent, who, in draining some of his land with pipes from 3 to 4 feet deep, met with bottoms of soft boggy matter; sods were forced down into these soft places, and a firm bottom was secured, on which to place the pipes. No failure or disturbance had occurred in this work, and the drains ran throughout the year, as they receive the water of springs as well as rain. Clay, rammed down to the bottom of trenches in soft soils, would often answer, and make the work permanent. In reply to a question from the President, Mr. Parkes said he had referred, on a former occasion, to the elongation of a pipe, when wet, compared to the same when dry. He had found by nice measurement, that a small extension in length occurred when a perfectly dry pipe was moistened; he deemed it, therefore, of some consequence to keep pipes quite dry until they were placed in the drain, as the subsequent longitudinal expansion in a line of pipes would act as a force to keep their ends firmly pressed against each other, provided they were originally well and closely laid; and this force would contribute to prevent a pipe from sinking, if a small fault should occur in the floor of a drain underneath a pipe. He had found that it required a considerable force to dislocate or separate one pipe from another, when the ends only thus butted one against another. In compliance with Mr. Pusey's desire, he had collected a good deal of information as regarded the preparation of clay and the cost of burning pipes with coal. On the latter subject he had found, from personal enquiry of two highly respectable pipe-tile makers in Suffolk, that from 3 to 3½ cwt. of coal were required to burn 1000 pipes 12 to 14 inches long, weighing from 2500 to 3000 lbs. per 1000; and Mr. Thomas Law Hodges, of Hempsted Park, Cranbrook, Kent, had recently informed him that his experienced potter, Mr. Hatcher, states—"The nearest calculation I can give, from experience, is that 1 ton of good coals will be sufficient to burn 18,000 pipe-tiles of 1 inch bore or diameter; and 500 common brushwood faggots will produce the same effect." This was equal to about one 1-9th cwt. of coal per 1000, and per 1000 lbs. weight, as the inch-pipes weighed about 1 ℔ each. As regarded the preparatory operations for rendering clay fit for being made into thin pipes, their nature varied with that of the clay. He believed there were few, if any, beds of clay to be met with which were fit for use without passing through the pug-mill, though he knew of pipe-tileries where washing was not found necessary. The washing of clay was an excellent and cheap process, and was capable of reducing hard as well as stony clays into a state fit for the pipe-machine. It was to be seen at most of the brick and tile-yards about London. The cost of getting the clay and washing here was about 2s. per 1000 bricks, weighing nearly 5000 lbs.; or about 5d. per 1000 lbs. of burned goods. This included the pumping up of water, which was rarely necessary in country tileries. He had found in Suffolk that getting and washing cost about 6d. per 1000 tiles, weighing 2500 lbs.; and Mr. Etheredge had informed him of a case in which it cost him 7d. for about 3000 lbs. The cost of washing was, therefore, quite insignificant when reckoned on pipes weighing only 1000 lbs. per thousand, and that of the apparatus would not exceed from 10*l.* to 15*l.* Mr. Slaney remarked, as regards the porosity of pipes and their absorbption of water, he was disposed to attribute a greater action to them than did Mr. Parkes, the ingenious author of that idea. At the same time, he would mention that another description of unglazed earthen pipe had been brought before the notice of the Commission on the health of Towns, made in Scotland, which had been proved, he believed, to be capable of sustaining a vertical column of water 60 feet high without passing water through them. If he recollected rightly, the experiment had been conducted by Mr. Smith, of Deanston, with a view of showing the fitness of such pipes to convey water into towns. Mr. Sainsbury, of Devizes, thinking that it did not appear to be generally known that the pipe draining-tiles were made in Wiltshire, presented four such tiles, of different sizes, to the Society. These tiles varied in internal diameter from 1 to 2½ inches, and in price from 21s. to 35s. per 1000.—The Rev. Thomas Cator presented a tile for the end of drains, having a transverse section made almost through it, near one of its extremities, for the purpose of receiving an iron grating, more or less raised as may be desired, to prevent the entrance of rats or rabbits into drains.—Mr. William Moffatt, of Montpelier-street, Knightsbridge, had leave to exhibit his wood pattern for a drain-tile, intended to possess great power of absorption and a channel for the descending water, as well as a great saving in the material of stone for filling in the drains. Mr. Hutchinson, of Ryall, Rutlandshire, presented three of the principal tools used by him in the process of shallow and deep draining, and manufactured by Messrs. Dudley and Son, of Norbriggs, near Chesterfield. Mr. Hutchinson, had for a considerable time experienced the advantage of implements such as those he then submitted to the Council both for strength and durability.

Milk Syphons.—Lord Camoys presented to the Society, as requested by the Council, a specimen of the block-tin syphon he had applied so advantageously to the use of his dairy. This syphon is formed of a tube 18½ inches long, and ¼ inch internal diameter: it is bent in the form of a bow, and by means of a pivot (formed of a portion of similar tubing) 2 inches long, soldered as the portion of a radius inside the arc at its middle; it may be placed conveniently in the socket of an upright cylindric stand, and thus turned round in any direction. That portion of the tubular arch of the syphon intended to be inserted into the milk-pan, is only 9 inches long from the insertion in the socket of the stand, and its curve is circular; the other leg is 9½ inches long, and forms only a slight elliptic curve from the same point of the stand, so that its orifice is 1¼ inch lower than that inserted in the pan. On this part of the tube is inserted, at 2½ inches from the top of the bend, a small stop-cock of block tin with a small tapering mouth-piece of the same metal. The end of the syphon intended to be immersed in the milk has four very slight notches filed in it for the purpose of allowing the milk to pass through them sideways into the tube, when the end of it is pressed close to the flat surface of the bottom of the pan; but to prove too minute as a passage for the cream when the milk has all been drawn off. Lord Camoys stated that he had half-a-dozen such syphons in use for his own dairy at Stonor Park, and he found them most convenient for drawing off the milk, and draining every portion of it from the cream. They were almost self-acting. The dairy-maid had only to insert the tube, draw out the air with her mouth through the stop-cock, and the current being thus established, the syphons required no further attendance for a quarter of an hour, when the dairy-maid on her return found all the separation of the milk and cream not only effected with the least possible trouble to herself, but with an exactness not to be attained even with great care by the ordinary process of skimming.—The President suggested glass as a better material for the syphon than block-tin, on account of its transparency, and the consequent facility afforded for ascertaining, by simple inspection, the perfect freedom of the tube from any impurity on its inner surface.—Lord Camoys had found no acidity form, or impurity collect, in the block-tin tubes, which being pliable, might advantageously be bent and moulded into any convenient shape required; and, by scalding in hot water, they were kept perfectly sweet and clean. These syphons cost 5s. 6d. each, and the wooden stands 2s. each. Any tinman could make them.

Tussac Grass.—Mr. Pusey, M.P., laid before the Council the copy of a despatch with which he had been favoured by Lord Stanley, addressed to his lordship by General Moody, Governor of the Falkland Islands, on the subject of the tussac grass of that colony, which had attracted the attention of the Society. This document, after detailing various facts connected with the cultivation of this grass, and the localities in the United Kingdom where it would probably become acclimatized, announced the collection of a certain quantity of the seed in the islands, and its transmission to England. His lordship stated, through Mr. Pusey, that this supply of seed was offered (at the price set upon it by the party who had been at the expense of its collection) to the Society, or to such party as they might nominate.—The Council ordered their best thanks to be returned for this communication; and allowed Messrs. Thomas Gibbs & Co., the Seedsmen to the Society, the option of becoming the purchasers of the supply of tussac seed, thus placed at the disposal of the Society.

Natural Manures.—Professor Sewell presented to the Council the following analysis, made for him by his friend Dr. Spurgin, of the substance (resembling mouldy peat) transmitted to the Society on the 17th of April last, by Mr. Churchill, of Colliton, near Dorchester; occurring in considerable quantities in a sour Kimmerage clay on his farm, and found to be an excellent manure for his grass lands.

Silica	70
Organic matter	10
Sulphates of lime and magnesia, oxide of iron, &c.	17
Moisture	3

The Council returned to Professor Sewell their best thanks for the favour of this communication.

Kelp Ashes.—Dr. Burgess, of Margaret-street, Cavendish-square, presented a sample of a manure which he thought might be worthy of the consideration of the Society; namely, the ash of the common kelp of commerce. He thought this application would be found advantageous on stiff clay soils deficient in saline matter. It was very cheap, being delivered in London by Messrs. Adam, White and Co., of Leith, at 3*l.* 10*s.* per ton. Dr. Burgess conceived that although the kelp ash does not contain the volatile alkali ammonia, or possess the animalized properties of guano, it could not fail, on account of the potash which constituted its most active ingredient, to be useful on such soils, which he believed were always benefited by the vegetable alkalies.

Moisture in Manures.—Mr. Davenport laid before the Council an interesting communication he had received from Mr. Bernays, of Manchester, on various topics of interest connected with the progress of agricultural improvement in the midland counties. Mr. Hubbersty, of Wirksworth, in Derbyshire, had set apart a portion of his land for the trial of experiments with ten different manures: the soil had been analyzed, and the produce when obtained in each case would be separately weighed and also analyzed. Mr. Bernays thought it worthy of remark, that although only one slight shower had then fallen since the manures were sown, the land manured with guano and charcoal not only equalled that on which the other manures had been applied, but totally outstripped the portion manured with farm-yard manure; while the land to which guano alone was applied had not at that time kept pace with the farm-yard manure lot, in consequence of the want of rain. Mr. Bernays thought these facts were worthy of remark, inasmuch as the beneficial effects of charcoal in dry weather, as a retainer of moisture, and an absorbent also of gaseous matter, as carbonic acid and ammonia, and other gaseous matter, are clearly proved. Mr. Bernays did not hesitate to say, that if the land, to which artificial manures were applied, were strown in *dry* weather, with a top-dressing of chloride of calcium, the baneful effects of a drought would be unknown, and the crops increase to a marvellous extent. The chemical substance thus recommended by Mr. Bernays has long been known under the name of muriate of lime, as one of the most deliquescent of our salts. It may easily be obtained by the action of spirit of salts on common chalk. When exposed to the atmosphere it remains constantly damp; and, by the French chemists of the last century, was regarded as a powerful stimulant, when applied in a very dilute solution to the growth of plants. Professor Solly, in his Agricultural Lecture at the Royal Institution on the 19th of April last, refers to the deliquescent effect of this salt, and its communication of dampness to soils (on the power of retaining water in their pores), when diffused through them in very minute quantity by means of a solution in water.

Guano.—Mr. Davenport also communicated the results of his own experiments in Cheshire, with guano, bones, gypsum, and farm-yard manure; and the Rev. Thomas Cator various analyses of guano, and the results of his experiments with that manure, tried along with bone-dust, rape-dust, dove-manure, and fold-manure, on lands of different character, all of which papers were referred to the Journal Committee.

A monthly Council was held at the Society's House, Hanover Square, on Wednesday, the 5th of June.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, presented to the Council the monthly report of the examination of the accounts, and the state of the funds to the end of May. He stated that 200*l.* having been already paid on account of the Southampton Meeting, there remained in the hands of the bankers the balance of 800*l.* on account of the Southampton subscription of 1000*l.*; and a balance of 1600*l.* on the general account of the Society. He had the satisfaction of announcing to the Council, that in the course of ten days after the recent general meeting, no less than 500*l.* had been received for subscriptions; and, as that amount consisted chiefly of arrears due to the Society—paid up probably from the just representations of the claims of the Society upon its members, made on that occasion—he entertained, in common with the other members of the Finance Committee, a well-grounded trust that extreme legal measures, under the powers of the charter, might, in the greater number of cases, if not altogether, be obviated by the continued and prompt payment of the remaining arrears. Their duty to the Council, however, imposed upon the Committee the painful necessity of recommending immediate legal steps to be taken against certain parties who were in arrear, and they had made the requisite arrangements for such a process accordingly.

A weekly Council was held at the Society's House, Hanover Square, on Wednesday, the 19th of June.

The attention of the Council was called by Viscount Howick, through Mr. Shelly, to the best mode of collecting and publishing the numerous details connected with draining, and the cheap production of the most efficient tiles for that purpose; by Mr.

Parkes to the improvements effecting in the Benenden pipe-tile machine of Mr. Law Hodges, at the manufactory of Messrs. Cottam and Hallen; and by Messrs. Barrett, Exall, and Andrews, of Reading, to their invention of a new and cheap machine for the production of pipe-tiles.

Dr. Playfair, consulting chemist to the Society, announced to the members the extensive arrangements he had made at Manchester, for analyses of soils, at rates one half the amount of those he had formerly transmitted to the Secretary for their reference. Mr. Pellatt presented a new glass milk-pan, with an inner circular groove for the reception of the milk last left in the pan, agreeably with the suggestion of Sir John Lubbock; and announced his engagement in perfecting glass syphons for dairy use. Mr. Frere, C.E., Bitton Rectory, near Bristol, presented a small supply of Neapolitan skinless barley, which he had received by the last Mediterranean mail, from a friend in Malta.

A Special Council, for the purpose of taking the prizes for next year into final consideration, agreeably with the bye-laws, and appointing the Judges for the Society's ensuing Show of Stock, Implements, &c., at Southampton, in July next, was held at the Society's House, in Hanover Square, on Wednesday, the 26th of June.

The Council finally arranged the prize sheet for the Shrewsbury Meeting in 1845, introducing new prizes for a bull calf under each of the divisions of short-horned, Hereford, and Devon cattle; additional prizes for horses; a new class of prizes, for sheep best adapted to a mountain district; a prize for oats, in addition to those for seed wheat and barley; and prizes for cheese made within the range of the counties of Anglesey, Carnarvon, Merioneth, Montgomery, Denbigh, Flint, Chester, Salop, and Stafford, constituting the district in which the meeting at Shrewsbury in 1845 will be held. Those Members of Council who intended to be exhibitors at the Southampton Meeting then left the room, when the remaining Members proceeded to the appointment of Judges for the various departments of the Show on that occasion.

Fall of Rain.—The President, at the conclusion of the business of the Council, communicated to the Members present, the following interesting statement of results connected with the fall of rain during the present and the last 14 years:—

Rain which fell on my Farm at Chapel Brampton, Northamptonshire, during the spring and summer months of the under-mentioned years:—

MARCH, APRIL, and MAY.	Inches.	JUNE, JULY, and AUGUST.	Inches.
1830	5·90	1830	7·79
1831	3 71	1831	7·84
1832	4·52	1832	7·91
1833	3·27	1833	6.73
1834	1·74	1834	9·34
1835	6·39	1835	3·36
1836	5·27	1836	4·32
1837	3·13	1837	6·81
1838	4·32	1838	6·52
1839	3·32	1839	8·96
1840	2·80	1840	4·88
1841	2·87	1841	11·10
1842	4·49	1842	6·45
1843	6·11	1843	5·74
1844	1·56	1844	?
Average of 14 years	4·13	Average of 14 years	6·94
Average of the spring months when less than 3 inches fell	2·70	Average of corresponding summer months	8·44
Average of the spring months when more than 5 inches fell	5·91	Average of corresponding summer months	5·30

The smallest quantity of rain which fell since 1830 inclusive, previous to 1844, in April and May, was 1 inch ·35. This year there has only fallen during those two months 0 inch ·28. (Signed) Spencer.

A monthly Council was held at the Society's House, in Hanover Square, on Wednesday, the 3rd of July.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, laid before the Council the monthly Report of the Committee on the state of the Funds of the Society; from which it appeared, that at the end of last month the amount of invested capital was £7700, and the current cash balance in the hands of the bankers at the same date £3457. Mr. Barker explained to the Council that this balance included £800 on account of the Southampton subscription, of which the Committee had recommended a further sum of £500 to be paid to meet the expenses already incurred in making the requisite preparations for the ensuing country meeting at that place, leaving £200 of the subscription of £1000 originally remitted from Southampton still remaining in the bankers' hands, and available for further claims on that account.

Colonel Challinor, Captain Forbes, Mr. Benett, M.P., and Mr. S. Bennett, favoured the Council with the results of their trials to effect the extirpation of rats from their premises; Colonel Challinor taking that opportunity of correcting a misapprehension of his statement at a former meeting, as to the extent of his experience of Mr. Meyer's preparations. At that time his application of those preparations had been limited to a broad holly hedge in his flower garden, where they were found to be perfectly successful. Mr. Manning, contractor of the Society's works at Southampton, addressed a letter to the President in reference to the site of the Pavilion. Messrs. Drummond, of Stirling, and Messrs. Morton, of Edinburgh, replied to the enquiries of the Council on the subject of Braby's draught-machine. The Rev. C. J. James, of Braintree Rectory, called the attention of the Council to the condition of agricultural labourers, and the intentions of the Committee appointed to report to the Council on that subject; and the Highland and Agricultural Society of Scotland announced the reservation of tickets for members of the Royal Agricultural Societies of England and Ireland who might be induced to attend the ensuing meeting at Glasgow. The Marquis of Downshire invited the attendance of members at the ensuing meeting of the Royal Agricultural Improvement Society of Ireland at Dublin, where the authorities were prepared to receive them with every attention. Mr. Brandreth Gibbs presented copies of the prize sheet of the December show of the Smithfield Club.

A weekly Council was held at the Society's House, in Hanover Square, on Wednesday, the 10th of July.

Pipe-tile Machine.—Mr. Cottam, of Winsley Street, Oxford Street, London, favoured the Council with a report on the latest improvements effected in the Benenden Machine of Mr. Hatcher for the production of cylindric draining-tiles. This machine in its present state consists of a framework supported on wheels; one-third of its length being appropriated to the platform of the machine for the manufacture of the tiles, and the remainder to the apparatus of the endless web for supporting the pipes as they are formed, and conveying them to the hands of the boys stationed to receive them. On a level with this endless web, and between two upright posts, is placed a square iron box, which forms the bottom of the machine. It is open at the top, and at that side in its front which adjoins the endless web. This box is always full of clay, the iron grating, which acts the part of a sieve or screener of the clay, being placed on the top of the box, and the required dies, or plates of iron, with apertures for the shape of tile required, secured in front. On this box thus arranged is placed a cylinder filled with clay from the pug-mill, and the piston being inserted, and forced down steadily by means of a winch working a couple of toothed wheels, the clay is driven under great pressure through the iron grating into the square box, and thence out of the box, through the apertures which constitute the pattern-dies of the tiles, which, as they issue continuously from the machine, are conveyed along the endless web set in simultaneous motion with the piston by a connection with the same winch and a couple of rollers. As one cylinder becomes emptied another is ready to replace it. A boy is stationed at each side of the endless web, and measures off the tiles, piling them alongside the machine, which, as the work proceeds, is moved from time to time forward, out of the way, by means of the wheels on which it is supported. Mr. Cottam explained to the Council the various improvements effected in the action of the piston, the insertion of the die-plates, the material best adapted for the endless web, and the mode adopted for keeping it in proper tension, the apparatus for measuring and cutting off the tiles, the advantages possessed by the cylindric shape of the tiles for arranging them, both for the purpose of drying and burning equably, the rate of charge for labour, fuel, &c., the number of tiles produced per day, &c., &c. He submitted to the inspection of the Council a model of the machine, and one of the cutters for measuring off the tiles. This apparatus Mr. Cottam described as one of the most ingenious and efficient contrivances he had ever met with for accomplishing its purpose by the most simple means. Previously to its use, the tiles were cut off by a wire without measurement; the consequence of which was, that they were not only of unequal length, but injured by the pressure of the hands on their sides on being conveyed away from the machine. It consists of a wooden roller, secured firmly by a screw at one end to a plate of iron; to this iron plate an iron bar is secured, which runs parallel three or four inches above the roller, and serves the purpose of a handle for the boy, as well as a support for the cutting-wire, which moves in a frame and socket up and down in front of the roller. The boy takes the apparatus by the handle, and inserts the roller inside the pipe-tiling up to its hilt at the iron plate; he then draws the cutting-wire, when the pipe-tile is perfectly severed, and remains loose on the roller, from which he at once allows it to glide off into its proper place, without injury or loss of time. Mr. Cottam stated that the cost of the machine complete would be £25; and for the inspection of such members of the Society as felt an interest in the subject, he had made arrangements at his manufactory in Winsley Street, (opposite the Pantheon, in Oxford Street,) to have the machine at work daily from 12 to 3 o'clock. Assuming one man, one youth, and two boys to be employed at the machine (including pug-work), with one man at the kiln, and the price of coals to be 25s. per ton, the following results would be obtained by calculation from the data laid by Mr. Cottam before the Council on this occasion:—

Diameter of Tiles.	*Number that can be made in a day of ten hours.*	*Cost per* 1000.
1 inch	11,000	4s. 6d.
1¼ inch......	8,000	5s. 6d.
1¾ inch......	5,800	6s. 0d.
2 inches.....	4,000	7s. 3d.
2½ inches....	3,200	8s. 6d.

Mr. Denison, M.P., remarked, that when it was taken into consideration how many points there were in the new system of tile-making which this machine would affect in reference to the cost of production, it could not be doubted that in the progress of the experience to be gained, it would be found, that in the less amount of clay required, the consequent reduction in fuel for burning, and the local advantage of coals to be obtained in so many parts of the kingdom at a less rate than that of 25s. as assumed in the present enquiry, there would be every reason to believe that tiles might be made by means of this machine at a still lower cost even than that which was at present deducible from the facts laid before the Council.

Mr. Denison then proceeded to give the Council an interesting narrative of the history of the ingenious inventor of the present tile-machine; and as he had liberally given up (at the patriotic suggestion of his patron, Mr. Law Hodges) all patent right in reference to its manufacture—a privilege probably equivalent to a premium of no less than £3000—he trusted that all members of the Society who intended to purchase the machine would obtain it at head-quarters, from the inventor's accredited agents, Messrs. Cottam and Hallen, both in reference to his own peculiar claims on the consideration of the promoters of agricultural improvement, and to the desirableness that no parties should experience disappointment by the purchase and employment of an inferior machine. He thought such a choice in their selection would not only be fair to the inventor, but a slight return to him in remuneration for the benefits he will have conferred on those persons who are so unfortunate as to have land which requires draining.

A weekly Council was held at the Society's House, in Hanover Square, on Wednesthe 17th of July.

Destruction of Rats.—Dr. Ure, F.R.S., communicated, through Mr. Pusey, M.P., the following results of his experiments on the best mode of preparing phosphorus as a poison for rats:—

"In the Journal of the Royal Agricultural Society there was published, several months ago, a prescription for preparing a poison for the above purpose, by an English gentleman resident in Germany. That preparation consisted essentially of phosphorus mixed with flour and sugar. It has been tried by a friend of mine in Derbyshire, who has a most extensive farm, and found to answer the purpose well; but there is a great difficulty in preparing it, from the insolubility, and even immiscibility, of phosphorus in water, attended with no little danger of fire. The process I have found to succeed perfectly is as follows:—Melt hog's lard in a bottle plunged in water heated to about 150 deg. Fah.; introduce into it half-an-ounce of phosphorus for every pound of lard; then add a pint of proof-spirit, or whiskey; cork the bottle firmly after its contents have been heated to 150 deg., taking it at the same time out of the water-bath, and agitate smartly till the phosphorus becomes uniformly diffused, forming a milky-looking liquid. This mixture being cooled, with occasional agitation at first, will afford a white compound of phosphorus and lard, from which the spirit spontaneously separates, and may be poured off to be used again, for none of it enters into the combination, but merely serves to comminute the phosphorus, and to diffuse it in very fine particles through the lard. This fatty compound, on being warmed very gently, may be poured out into a mixture of wheat-flour and sugar, incorporated therewith and then flavoured with oil of rhodium, or not, at pleasure. The flavour may be varied with oil of aniseed, &c. This dough, being made into pellets, is to be laid in rat-holes. By its luminousness in the dark it attracts their notice, and being agreeable to their palates and noses, it is readily eaten, and proves certainly fatal. They soon are seen issuing from their lurking places to seek for water to quench their burning thirst and bowels, and they commonly die near the water. They continue to eat it as long as it is offered to them, without being deterred by the fate of their fellows, as is known to be the case with arsenical doses. My friend in Derbyshire bought a pot of Mr. Meyer's rat-poison, and found it to be an analagous phosphoric preparation. The present mode of preparing it is the result of my own experiments, made with the view of diffusing phosphorus through a mass of flour, sugar, &c., without the risk of fire."

A monthly Council was held at the Society's House, in Hanover Square, on Wednesday, the 7th of August.

Finances.—The Chairman of the Finance Committee laid before the Council the monthly report of the state of the funds of the Society to the end of the past month; from which it appeared that the current cash balance in the hands of Messrs. Drummond at that time (including a residue of £300 on account of the subscription of £1000 received from the town of Southampton) amounted to £2858, and the capital invested in the public funds to £7700; the Council, before leaving Southampton, having defrayed the expenses of the London police, amounting to £125, and placed at the disposal of the stewards and director of the yard, out of the deposit of £3308 in the hands of Messrs. Maddison and Pearce, the Society's local bankers, the sum of £1000, to meet the immediate claims of a miscellaneous character connected with that department. The Council then proceeded to vote the discharge of the following claims, as recommended by the Finance Committee:—

Contract for the Yards and Pavilion at Southampton (balance of account)...	£1751
Ditto Council Dinner	405
Ditto Pavilion	566
Prizes awarded at Southampton	1315
Mileage, &c., to the Judges of the Show	354
Miscellaneous Bills connected with the Southampton Meeting........	60
Books for the Library	154
Binding and Carriage of Journal	160
Miscellaneous Bills on general account	286
Total........	£5051

Trial of Implements.—Communications in reference to the trial of implements at Southampton were received from Mr. Burke, Mr. Smart, Mr. Clayton, and Mr. Comins, and were referred to the stewards of that department. The Secretary was directed to communicate with the Judges of Implements, and request them to furnish the Council with a statement of the implements submitted to trial; of the results of such experiments as were made; and, generally, with an expression of their motives for their respective awards; together with a notice of such implements as may, in their opinion, deserve special commendation or encouragement.

Veterinary Science.—1. *New Epidemic.*—Prof. Sewell reported to the Council upon a letter referred to him at a former meeting, received from Mr. James Dixon, of White Moss Farm, Cheshire. In that communication Mr. Dixon stated, that until he had adopted the treatment of bleeding his cows immediately on their being attacked with the prevailing disease (termed the "New Epidemic"), he lost several; but none had died since he had put that measure into operation. He urges at the same time, in the most strenuous manner, that particular care and caution are required to keep a continual watch over the animals, and apply the remedy at the very instant that the symptoms of the disorder make their appearance, as on this promptness depends all the value of the measure. As soon as the symptoms are perceived, he recommends bleeding without delay. Professor Sewell informed the Council that this was the practice he had himself been in the habit of recommending; and he believed that the losses which had been sustained by the owners of animals from this complaint had arisen more from want of close attention to their condition, and to the first changes in them from health to disease, than from any other cause; and he accordingly took that opportunity of earnestly recommending Mr. Dixon's watchful care over his stock to all other farmers in general. The first principal step of bleeding having been taken in due time, Prof. Sewell would recommend the administration of the usual laxative medicines, and the application of external stimulants, to be left to the judgment of the nearest practitioner.

2. *Diseases of Domestic Animals.*—Professor Sewell then reported that the examination at the Royal Veterinary College having concluded for the session, ninety-three pupils had received diplomas, several of whom had also obtained certificates as having attended at the lectures and practice on cattle, sheep, and other domestic animals; in which branch of their profession he thought their services to the farmer would be better secured by agricultural associations and farmers' clubs in the country engaging them, at fixed moderate salaries, to settle in localities where they are most likely to be required. This plan had been adopted with great success on the Continent, but it was there effected as a Government measure, and had become a long established law.

3. *Rabid Animals.*—Professor Sewell informed the Council that, keeping in view the object of the Society's connexion with the Veterinary College, he had decided on devoting the period of his professional recess during the present autumn to a practical enquiry into the most successful means by which the virus of rabid animals may be counteracted, and the fearful results of hydrophobia obviated. He accordingly requested the co-operation of the members in carrying out this enquiry, and would himself willingly pay every expense connected with the sending up to the college, from any part of the country, of such sheep, lambs, or calves, as may unfortunately have been bitten by rabid dogs during the late hot weather, or should become liable to a similar infliction at any future time. He mentioned small ruminating animals only, as being more easily managed when labouring under the worst or most violent symptoms of the disease than horses, cows, or bullocks, which, under such circumstances, are not only almost unmanageable, but highly dangerous, and when such were intended to be sent to him, he would feel favoured by a previous notice by letter. The animals thus requested might be conveyed in the ordinary railway trucks or cars, or sent by canal boats. By the latter mode Prof. Sewell had received a heifer from Worcester a few years ago. Sheep and lambs have been sent in covered carts; but the most rapid conveyance is preferable. A sheep or two might be put into crates used for earthenware, and the expense of engaging an entire car be thus obviated, while the animals would be less annoying to the railway agents. Should the disease commence on the journey, the animals should be tied by the legs, and be well littered with straw. Net muzzles might be worn, or sent along with the animals, in order to be in readiness. Professor Sewell has, however, never had any fear of rabies being produced by the bite of any animals but those of a carnivorous kind, including swine as such. Of all the numerous cases of canine madness he had seen in horses and other animals, he had not observed a single instance in which they were unable or unwilling to drink water freely. He had always found the disease to commence (with a single exception) from the third to the sixth week after the bite had been inflicted. If, therefore, it should not manifest itself in the stock sent to him by that time, he would return the animals to their respective owners free of expense. In conclusion, the Professor submitted to the inspection of the Council a series of highly interesting coloured drawings, exhibiting the morbid results on the brain, nerves, and other anatomical structures of the animals which had died from the ravages of hydrophobia; and he trusted that his request might not be considered an irregular one, as he was anxious to effect an immediate communication with the members, and to lose as little time as possible in obtaining objects for his intended research.

English Silk.—Mrs. Whitby, of Newlands, near Lymington, Hampshire, favoured the Council with the following interesting narrative of her operations:—"I have, during several years past, cultivated the mulberry (mostly used in climates where silk is grown of the best quality), and fed silk-worms upon it with great success. I have had an opinion on the quality of the silk produced from them, which encourages me to hope my example will be followed by others, as a means of profit to the agriculturist, and affording employment to the industrious classes. I was led to the undertaking by hearing, in 1835, as I was travelling in the north of Italy, of an English gentleman, 'who had doubled his capital in three years, and who received 10 per cent on that laid out on a silk establishment near Milan;' and wonder was expressed that the culture had not been tried in England. Agricultural produce had been at a low ebb in England, and it was difficult to find profitable work for the labourer. I determined to try and introduce the cultivation of silk. I saw the young mulberry-trees in Lombardy blown aside by the force of the N.E. winds, as our forest trees are here by S.W. gales. At this period a fog of 33 days' duration had prevailed, and the ground round Milan was covered with snow, and iron-bound with frost. I knew that around Florence the nights were cold, and the weather uncertain, even as late in the spring as the 1st June. Judging from all this that the climate of England was equally favourable to the growth of the mulberry, I ordered from a nursery garden at Turin 100 standard trees and 1000 dwarf mulberry plants of the sort called 'Of the Philippine Islands' *(Morus multicaulis)*. This sort produces much larger leaves than the Italian wild white mulberry, or that which in England is cultivated for its fruit. Its growth is rapid, and it is easily propagated by cuttings, which strike as readily as the willow. My plants did not arrive in England until April, 1836. I treated them according to the directions given in Mons. Burden's book, and I did not lose one. I even gathered leaves from them the same year. I bought half-an-ounce of silk-worms' eggs at Novi, which is said to produce the best silk in Italy, and thus laid the foundation of a small establishment, which, I hope, will be the means of spreading the culture of raw silk throughout England, and in the course of years render her independent of foreign resources. I have had no difficulty whatever in rearing the silk-worm. I possess an old loft over an unused stable; in the former I have reared the worm; in the latter I placed a silk reel. Although my cocoons were pronounced 'good,' and would bear a comparison with the specimens I brought from Italy—although they were exempt from the diseases which I understand carry off at times whole colonies there—although I imported a silk reel from Italy, and went to a great expense in having a scientific apparatus laid down to heat the water, I found insurmountable obstacles in winding off the silk *fit for the loom.* I tried year after year in vain: it was bright and beautiful to look at: it was pronounced by Mr. Bonorardis, of the firm of Prevost & Co., 24 A, Cateaton Street, to be of '*good quality, and sufficient bone and brightness*, but the winding was without the ʒ necessary for the loom.' This opinion encouraged me to send to France for a person acquainted with the process: the result you have in the specimens I have sent you. The yellow silk is the growth of this year, the white that of cocoons kept during my many years of trial. I have several pounds already wound off, equally good, and the French girl, aged 19, and another (English) of 15, are now busy at work winding more. All the expense I have incurred in the apparatus above-named is so much money thrown away. The wheel I have imported this year with this young girl from France is cheap, simple, and effectual; it is, also, so easy of accomplishment, that three of my household can wind with facility, besides a cottager's wife, who is employed at sixpence per day to attend upon the worms. The eggs can always be retarded so as not to be hatched before the mulberry is ready to put forth sufficient food. In France and Italy the hatching begins about the 1st of May; I find a month later preferable. All the books I have read describe a temperature of 75° to be essential. I have proved, by eight years' experience, that the insects thrive better at one much lower. In damp or cold weather, I have a very small Arnott's stove lighted, which regulates the temperature to 65° to 70°. Ventilation is more necessary than extreme heat. The expense of this stove is trifling, as, indeed, is everything connected with cultivation of silk. This has been a dry season, and the leaves, in consequence, fewer and smaller than usual; but the same difficulty has occurred in France, and the father of my little winder writes word that he was obliged to throw away this year 40,000 worms for lack of food. Mine would have suffered also, had not my friends in the neighbourhood assisted in supplying me with leaves of the red mulberry. A scarcity of leaves happening occasionally is no proof that it cannot succeed. Look around at our fields. Where are the spring crops of barley and oats? Where are the turnips which ought now to make them green? Checks from bad seasons will occasionally happen to every produce of the earth in all countries; but, in general, the mulberry of the Philippine Islands grows luxuriantly, and multiplies freely in this part of England. The expense of an establishment such as mine would be small. That which I have incurred in my unassisted efforts to succeed must not be considered as necessary by any willing to take advantage by my experience; and I am so desirous to see the culture of silk become general, that it will give me much pleasure to answer any enquiries you may wish to make, or give any information in my power. I almost fear I shall have tired you with this recital; but I knew not how to make it shorter, so as to be clear and convincing. Be it remembered there was the same prejudice in France as now exists in England against this branch of agriculture; it was attempted to be overcome by Henry IV, but what he tried to enforce by edict became general as it became better known. All I desire is, to make it known, that others may try it in other parts of England. P.S.—The worms of this year were reared partly from eggs saved by myself last year, and partly from insects I purchased from Signor Anegoni, 16, Church Street, Soho."

The best thanks of the Council were returned to Mrs. Whitby, for the favour of this communication.

Nothing of material importance occurred at the subsequent meetings. The Council was adjourned to Wednesday, the 4th of September, but there was no meeting, owing to the absence of members from town. The adjournment now stands over the autumn recess until the 6th of November.

THE BOGS OF IRELAND.

I have long looked at the natural resources of Ireland, and felt, with many others, a deep regret that they were not made more available. Many circumstances have conspired to cause such a state of inaction, which all who have any knowledge of her history are well aware of, and for which reason I shall not enter upon in this short letter. That better times are dawning upon her there is no question; capital is invested to a greater extent than formerly; prejudice is dying away; public works are being executed, as on the Shannon, and the various lines of railway, which, while they open tracks for her natural produce to be carried with facility to market, will also have an immense effect on the social condition of her people. Thousands of those poor creatures wander hundreds of miles during harvest-time in search of employment, suffering the utmost privations, and yet conducting themselves in the most exemplary manner; and this leads me to think that if work could be found for them at home, it would be the greatest boon which could be bestowed.

Under such feelings I gladly look to anything which can possibly create employment in Ireland; and, accordingly, I point out to your notice a discovery of the value of peat-bogs in that respect. Our Gallic neighbours, it appears, are in the habit of working peat into a variety of moulded ornamental articles! The peat is reduced by beating to a pulp, and is then placed under a press, to force out all humidity except what is necessary to keep it sufficiently moist to receive impressions from the mould in which it is to be placed. In this state it may be converted into ornaments of various kinds, such as are made in embossed leather. When rendered firm by a solution of alum or other adhesive material, it forms a cheap and durable flooring; and some idea of the extent to which it may be applied may be learnt from the fact that billiard tables are now manufactured from it: one, rich and beautiful, has lately been produced in France, which is valued at 15,000 francs!

To the friends of Ireland the above information may prove extremely valuable, as from a very limited, or I should say trifling expenditure, a source of wealth and employment would most certainly arise, and which by vigorous direction might form a very important addition to the domestic manufactures of that country. The cultivation and preparation of flax for market have been carried on with a most creditable spirit, and Irishmen have been sent to Belgium expressly to learn the best methods of accomplishing those objects; would it not, therefore, be advisable to adopt similar measures with regard to the manufacture of peat? Or is it not a fit subject for the interference of the Royal Agricultural Improvement Society of Ireland? Might not a premium be offered at the outset for the best information? That obtained, prizes should then be offered for the best manufactured and most useful article (or likely to be in the greatest demand) from peat. There is no lack of the raw material; and, by the judicious application of capital and skill, the immense dormant masses of that material will be rendered of general utility to the wants of society. I therefore call upon the resident well-wishers of Ireland, particularly, to seek for information on the subject, and satisfy themselves that the introduction of the manufacture of peat would benefit that country, and then adopt the most vigorous measures to carry it into execution.

I am, Sir, your obedient servant,

B.

Sep. 8, 1844.

Effects of Beet-root and Potatoes on Cows.—At a meeting on the 19th of August, at the Paris Academy of Sciences, M. Dumas read a report on some experiments made by M. Boussingault, relative to the feeding of cows with beet-root and potatoes. M. Boussingault states that two cows which were fed exclusively on beet-root fell off in flesh in seventeen days nearly one-sixth, and their milk diminished from eight to nine litres per day to five litres. They were then turned into pasture, and soon resumed their former weight, and gave the former quantity of milk. They were next fed exclusively on potatoes, when they fell off still more in flesh than they had done with beet-root, and the milk was reduced to two litres each per day. On being placed on a mixed food of hay, chopped straw, beet-root, and potatoes, they again recovered their flesh, and gave the former quantity of milk. The conclusions of M. Boussingault therefore, are, that potatoes and beet-root do not perform the part usually imputed to them of fattening cattle, or of increasing the quantity of milk. His experiments show that this is the case when this food is given to the exclusion of all other.

SPADE CULTIVATION—COTTAGE ALLOTMENTS—ISLE OF WIGHT: ITS FARMING, GEOLOGY, &c.

Whenever the subjects of spade cultivation and cottage allotments have been brought under our notice, and, as has not unfrequently been the case, they have been alluded to in terms of distrust, if not downright condemnation, we have always suspected that prejudice or mismanagement, or both, have, somehow or other, had to do with the decision.

On spade husbandry, generally, whether performed by the farmer or the cottager, we shall first say a few words; but, by way of preamble, just take leave to state that the term *spade* husbandry is, nine times out of ten, a misnomer. The land is not, or ought not to be, cultivated with a spade, but a fork—a more effective, and a better tool altogether. It penetrates deeper, and offers far less resistance, especially on stiff soils, than the spade. Dr. Yelloly, in describing the method pursued by Mr. Mitchell, near Wymondham, tells us "Though the process was begun with the spade, a strong three-pronged fork of 14 inches deep and 7½ inches wide, which was found to be more manageable and less expensive than the spade, was soon allowed to be substituted for it, *on the application of the workmen*. It cost 4s. 6d. instead of 6s. 6d., weighed 8 lbs., and when worked down, could be relaid at a trifling expense. The digging is effected by taking in about 4 inches of earth at a time, pressing perpendicularly, and getting to a proper depth at two thrusts. The earth is not, however, turned out of the trench to a greater depth than 10 inches, though the fork may get down as far as 13 or 14; but that which remains at the bottom, in the state of what is called "crumbs," answers the purpose equally with the earth that is thrown out, of forming a permeable medium for the roots of the plant which is to grow in it." It answers a *better* purpose than if the "crumbs" were brought up to the surface; for the error of all trenching is burying the good soil, and bringing to the top the bad. And herein, be it observed, consists the advantage of *subsoil* ploughing. Were it possible, at one operation, and with a single plough, to go the full depth which is usually attained by the combined operations of the common and subsoil ploughs, it would not be so desirable; because, in the one case, the dead inert subsoil is thereby placed just where it is not wanted—in fact, where, for a considerable time at least, it is positively injurious to vegetation; whereas in the other, it is, though thoroughly moved and broken, retained where it ought to be—at the *bottom* of the furrow. The same objection exists to double ploughing, or to one common plough following another, to obtain a greater depth of soil; an object which, though doubtless attainable by such a process, does unquestionably more harm than good till the whole of the soil becomes amalgamated and equalized in quality; a work of time. It is this injudicious application of deep ploughing and digging which has led to the partial condemnation of the spade husbandry, whereas the blame ought to have rested not with the system, but with its misapplication and abuse. We scruple not to confess ourselves of the number of those, who, having very imperfectly tried the forking of land as a preparation for a crop, and finding it not to answer the expectations we had formed of it, relinquished it at once, as benefitting not the employer, but only the employed. Had we pursued the plan throughout the course; or only a part of the course—in other words given it a fair trial, we doubt not the results would have been very different; for there can be no question but that a perseverance in the system of either forking or digging will eventually show itself in the amelioration and increased depth of the soil; whereas, as has been very properly observed by Mr. Gedney, of Redenhall, who has had considerable experience in spade husbandry, "The plough in moist weather frequently glazes the bottom of the furrows, and thus prevents the passing off of the water, the retention of which in the mould which is intended for the reception of the seed, on heavy soils, is too frequently succeeded by scanty crops, more especially when sown with barley." All, however, seem to agree in the propriety of ploughing, rather than digging, clover-land intended for wheat.

With respect to cottage gardens, or allotments to labourers for spade cultivation, it has always appeared to us a most desirable system, and one which would well repay the exertions of all land-owners and occupiers. But it requires considerable attention on the part of the landlords, and especially to the following particulars, without which the plan will undoubtedly fail. The allotments should not be at too great a distance from the cottages of their respective tenants, or the work will be either wholly neglected, or badly done; for it cannot be expected that a man should walk far, after his customary day's work is ended, to enter again upon hard labour, though on his own account. Then, again, look at the waste of time in going to and from the distant allotments. A contiguity to his residence saves all this; besides enabling him to avail himself of his whole stock of family labour in the cultivation of his land, and subsequent attention to its various crops.

Another point not sufficiently attended to by those who profess to be friendly to the system of cottage allotments is, the amount of rent which the tenants ought to pay. The prevailing idea is, that because the acreable produce of land cultivated by the spade is greater than that which can be obtained by the plough, the occupiers ought to be charged with a corresponding advance of rent for their various holdings. Now this is anything but fair; for if by the spade, or by any particular mode of management, the cottager is enabled to raise heavier crops than the farmer can obtain by his management, surely advantage ought not to be taken of his skill and industry to exact from him a higher rent than that of the average of the neighbouring farms. We are sorry to observe but too frequently a reluctance on the part of the farmers to give up any portion of their occupations for any such purpose, except at an increase of rent. They argue thus: "We should obtain a certain profit by cultivating these lands ourselves; unless, therefore, we can obtain a similar profit, or nearly so, by letting them to cottagers, it cannot be expected that we should part with them." And accordingly they do not part with them, except perhaps a certain field, which they give up to their poor neighbours "for a consideration," the locality of which is the last point upon which they trouble themselves. We have dwelt rather longer on this subject than we intended, but it is one which we deem of so much importance, and particularly to the labouring classes, to whose independence and well-being, if properly conducted, the spade system is sure to contribute, that we hope we shall stand excused to the reader for thus "bestowing our tediousness" on him.

And now, gentle reader, we will address thee tour-fashion; for, at this present writing, be it known to thee, and "to all whom it may concern," we are are far from the land of our fathers, even taking up our temporary sojourn in the romantic and sequestered village of Shanklin, in the pleasant Isle of Wight (the *Insula Vectis* of the Romans), a country not less new than agreeable to us; for though we own to having been "as far *north*" as our neighbours, we are free to own we never till now were so far *south*, and truly a pleasant country it is to travel in, or to live in; though, sooth to say, we affect it not to farm in—a species of paradox, it will be said, when we declare, which we are bound in strict justice to do, that the soil is good, the climate is good, the markets are good, the people are good, and, in short, they're all good things together. The soil is good—very true; but it is for the most part inconveniently hilly, and so strong that ploughing cannot be effectually done (we speak from observation) without the aid of four horses. Here would be a glorious field for the operation of the Rackheath plough, using it, not up and down, but either very obliquely, or sideways, on the hills. It is not to be inferred that the land is all stiff alike. By no means. There are sandy loams easier to plough with two horses than the more tenacious soils with four, or even six. But the land is badly managed, and take what crops you will, there is not half the produce it ought to furnish. Every field is overrun with weeds, the luxuriance of which plainly indicates what the soil would do, if put upon its mettle. In clover layers the individual plants are grand; but they are so thin on the ground, as at best to furnish but half a swathe. The meadows, depending less on art than nature for a crop, yield a larger proportionate return than the arable land. The climate, especially on the south, or what is called "the back of the island," is as pure, mild, and salubrious as, perhaps, England can produce; and we were not a little surprised at the forward state of vegetation, compared with what we had left behind in Norfolk and Suffolk. Laburnums, honeysuckles, China roses, columbines, and in short, all our common blossoming shrubs and flowers, are in their full beauty. In the fields the violets and primroses are all off, and have made way for an endless variety of other wild flowers, as hyacinths, orchises, vetches of different descriptions, campions, &c., &c., whose size and brilliancy, amply attest the excellence of the soil and the mildness of the climate. In the gardens, too, the gooseberries will soon be at their full size, and cherries are full as large as our common grey peas. Everything else in proportion. The Downs, in the Isle of Wight, though they are somewhat monotonous, as a feature of the country, in the eye of the traveller, are by no means devoid of interest to the farmer, especially if he happen to be a sheep-fancier. The quantity of sheep kept, however, is not so great, nor the quality so good, as it might be. The breeders might take a few useful hints from their brethren across the water, of the Sussex and even the Hampshire Downs. To the geologist it need not be said how rich and varied a store of information is here offered, at every turn, to his scientific view. Everywhere along the coast his eyes are feasted with sections of the stratification; and the cliffs of various altitudes exhibit, even to the uninitiated, by their curious colours and contortions, a spectacle not less wonderful than pleasing. All who travel to this interesting district should, if possible, see and consult Sir Henry Englefield's splendid work, so ably and scientifically illustrated by Mr. Webster. The different guide-books, particularly Barber's, abound with plates, some of them very beautiful; but Mr. Webster, to the skill of the practical draughtsman adds that of the scientific geologist. All his illustrations are valuable, as being strictly and geologically correct. In addition to all this, they are of a fine folio size, and, combined with the interesting nature of the materials which form the body of the work, furnish a most delightful work of reference to the tourist, whether learned or otherwise.

June 18, 1844.

The above article was intended for publication in our last number, but somehow got mislaid; a circumstance which, though it annoyed us at the time, we now do not regret, as in the interim the great Agricultural Meeting has been held at Southampton, an opportunity of which many, besides ourselves, took advantage to visit the scenery, of which we have here attempted to give a faint description. We were happy to renew our acquaintance with places we had seen, and of exploring others which were alike new to us and the friends by whom we were accompanied. We saw more of the interior of the island than our former visit enabled us to do, and are quite ready to own that the further we went inland the better we liked the farming and the crops; particularly the clovers; which, for so dry a season, were very respectable; fully equal, if not superior to any we saw between Portsmouth and London. We would especially notice the greater part of the tract between Niton and Cowes, through Newport. The fields are generally large; the ploughing and other culture by no means despisable; and we all agreed that a farm of 300 or 400 acres in such a district would not be a bad speculation.

Time and space will not allow us to enter much into detail, but we cannot omit mentioning the trip by steamer from Cowes to Southampton, as among the most delightful features of the excursion. We affect not any great relish for, or knowledge of, seamanship in general; for in truth we admit we are but sorry sailors; but here, when the weather was, as in our case, bright, clear, and calm, and the water still enough for even the most qualmy of stomachs, it would have been strange indeed to have passed without admiration the beautiful shores of the Southampton Water. We know of few things of the kind more thoroughly enjoyable.

Of the comforts on shore we cannot say much. Imposition seems to be the general rule at Southampton; and we can truly say, that at no former meeting of the Agricultural Society had we worse accommodation, or paid higher for it.

Mr. Cuthbert Johnson's article on the Southampton Meeting in our July number was of great service to us; and indeed the Magazine was our constant book of reference throughout the whole journey. He deserves the thanks of every visitor to that locality; and his descriptions are for the most part very accurate. On one point, indeed, and but one, we felt disposed to differ from our respected correspondent relative to the farming of the downs of Hampshire, especially between Basingstoke and Winchester. A natural feature in their course of husbandry, he tells us, is sainfoin. It *ought* to be, on these and all other chalky soils, but we looked for it in vain, except, if we remember right, in a solitary instance. But we fully admit that a railroad carriage is not the vehicle to go a farming in.

Of the general features of the show we intend not to speak here. Already has this been done by so many different hands—professional, as well as amateur, that it would be but a waste of words to attempt it.

One curious phenomenon fell under our observation whilst strolling leisurely up to the show-yard on foot with a friend (which we preferred to the exaction of double and treble fares by the coach and omnibus drivers). In our way stood a noble avenue of elms. Around one of the younger trees we observed a number of wasps, attracted apparently by the sap which was fast flowing from the trunk; a great part of which was quite wet with the discharge. On our pointing out the circumstance to a gentleman who was passing, he assured us the wasps were certain to kill the tree, even were it as large again, and directed our attention to two of the finest trees in the row, which had been destroyed in a similar way. "Do you mean to say," we asked, "that the insects perforate the wood for the sake of the sap?" "I do," he replied. We could find but this one instance; but here certainly the wasps were as busy as round a sugar cask outside a grocer's shop. The fact was undeniable. The only doubt was, and is, as to the *cause* of the phenomenon. Was it a device of the insects to get at a favourite food, or had the tree been previously injured, so as to create the discharge we witnessed, and thus to attract the attention of these lovers of sweet things? We leave the reader to decide between cause and effect; merely observing in conclusion, that the circumstance established one fact, that the juice of the elm is sweet, though not perhaps so abundant in saccharine matter as that of the sugar maple.

TOURIST.

September, 1844.

ON FURZE OR GORSE AS FOOD FOR HORSES.

Sir,—Happening to be in company lately where the subject of feeding horses with furze, gorse, or whins (for the names are synonymous) was introduced, I was somewhat amused at the manner in which it was received by certain of the party—good farmers too they were, and of Norfolk to boot! They seemed to regard it as quite *infra dig.*—a sort of keep which might do well enough for Welsh or Scotch hacks, but was beneath the notice of either them or their horses. I own I was at first half inclined to join with the *anti-furzites*—I scarce knew why, except from a sort of prejudice (I dare say an unreasonable one) I have against the plant, which to me is always an eye-sore, when sown, as it often is, on a bank, at the back of a whitethorn fence. It is in such cases too much of the tory for my liking—it robbeth its thorny neighbour of his *dews;* it thriveth at his expense; it is a very thorn in his side; though no *radical,* it is bad at the *roots,* and ought to be hewn down and cast into the oven. But though *as a fence* I am thus disposed (perhaps without sufficient cause) to take offence at it, it would be the height of folly to condemn it *on other grounds,* at least without a fair trial—by way of preliminary to which I thought I would for once turn lawyer and search for precedents. The result is as follows, taking my authorities in order of date. Mortimer, in his "*Whole Art of Husbandry,*" (Dublin 1721) cap. 1, fol. v. advises furze "on old dry banks, or such a dry sand or gravel that no other fence will grow on it." "Seeds are the best way of raising it, especially the *French furze,* which grows to the height of 15 or 16 feet, and is not subject to run into the ground, or to spread like the common sort. It should be carefully *kept from cattle, especially sheep, who are great devourers of it,*" &c. This, though only an *incidental* recommendation of it as cattle food, will nevertheless be considered worth attention by the reflecting farmer; but a little further on our author tells us, "They make very great improvement of their sandy gravelly lands in *Devonshire* and *Cornwall,* by sowing of them with *French furze* seed, which they reckon a great improver of their land, and a fitter of it for corn."—P. 128. What difference there is between *French* and the common *English* furze I have not been able to ascertain: a writer in the *Farmer's Journal* for *Dec.* 10, 1810, p. 76, supposes the sort recommended for horses to be the *French furze;* another correspondent of the *Farmer's Journal* for *Dec.* 31, p. 99, says

" there are two species of *furze* growing in this country : *ulex Europæus*, common furze—and *ulex nanus*, dwarf furze, which is the one mostly growing and given to horses in this county." [Carnarvonshire.] According to Mr. Loudon it is called in France *ajonc, jonc marin,* and *genêt épineux*.—*Encyclopædia of Agriculture*, p. 884.

But to go back to old Mortimer : " The young tender tops of furze being a little bruised and given to a lean sickly horse, will strangely recover him and plump him up."—Vol 1, p. 196. This then is no newfangled theory, but a practice nearly a hundred and twenty years old, which some will say tells marvellously in favour of the doctrine of "the wisdom of our ancestors !".

Mr. John Rootan, of Devonshire, mentions it as a favourite provender in North Wales for working horses, and the sole food of cows from All Saints (Nov. 1) to May. " A tenant of mine," he goes on to say, "supported his whole stock of horses, cows, and store cattle for three months (a few years ago) entirely on gorse."—*Farmer's Journal, May* 2, 1808.

Mr. Rootan, in another letter, says that a neighbour of his (Colonel Edwards), on a farm of nearly 400 acres, with three teams and three or four saddle horses, does not use more hay in the course of the winter (and not any corn) than is used by an English farmer in the course of one month, with corn. He allows each horse four bushels of gorse per day; and as the gorse is of a heating quality, he gives half a peck of new (?) potatoes, or Swedish turnips. The gorse is bruised in a mill for the purpose. In a note he adds, " I could give the names of fifty persons, whose horses have not tasted hay or oats for many years, and do their work well."—*Farmer's Journal, Nov.* 26, 1810. Other writers in the *Farmer's Journal* have stated the result of their experience, but I pass from these to the remarks of William Fraser Tytler, Esq., of Belmain, in the *Edinburgh Farmer's Magazine*, vol. xviii, p. 215, who appears to have tried furze for horses on a large scale, and to have detailed his experiments with more than common minuteness; indeed the term *experiments* can hardly be said to be applied to this gentleman, for this appears to have been his customary mode of feeding ever since the winter of 1812. A woman in six or seven hours collected enow of the young shoots for twelve horses ; these were afterwards bruised by a stone *on edge*, which took three hours more. The horses did well with them at 28 pounds per day each, and no oats, from November to the middle of March. After this time horses begin to show a distaste for the whins. In further proof of the excellence of this horse-keep, we are told that " the forage used by the regimental horses of the British army under the Duke of Wellington, while in Spain and the Pyrenees, was chiefly whins, on which they were found to thrive remarkably well; the whins were collected by the men, and either bruised between two stones or pounded in a trough." In the fifth volume of the *Highland Society's Transactions* it is commended not only as food for horses, but one of the best for cows, producing a winter-made butter far superior to that from any other food. Mr. Loudon reckons that poor, hungry, gravelly land, not worth 5s. an acre, may be profitably devoted to this purpose, but it would not pay on better soils. Dr. Anderson, speaking of the *culture* of the whin, recommends that it be sown with a crop of barley, in the same way as clover is usually sown, allowing from fifteen to thirty pounds per acre; next season, if tolerably clean, the plants advance rapidly after midsummer, so as to produce a pretty full crop before winter; cut these with a scythe immediately after clover fails, and through the whole of the winter. In the second year they will send forth shoots nearly four feet in length; but though so long, and apparently rough, the prickles are soft and the stems slender. One thing is necessary to attend to, viz., to cut *as low as possible;* and another, to keep the young plants free from grass—which, as is the case of lucerne, will prove very injurious to them.—*Loudon's Encyclopædia of Agriculture*, p, 884. At p. 382 of the same excellent work, Mr. Loudon has given a plate of the *furze bruiser;* but I am inclined to think the stone on edge fully adequate to the purpose, for I am not so enamoured of the plant as to go a great way about for the means of preparing it.

The sum of all I have said and gathered on this *prickly* subject resolves itself into this: land that is too light and too poor to grow anything else, may be as well, perhaps better occupied with *gorse* than grass or grain; but it must be well *kept down* and *kept clean.* And although I confess to Norfolk eyes it appears a *beggarly crop,* yet I am for giving even a beggar a fair trial. Who knows but that, like some other of his brethren, the *gorse* may prove of more value than we have expected. We must not always judge of things by their look.

T.

NORFOLK, Sept. 16, 1844.

EDUCATION OF THE POOR—ITS PROPER AIM—THE BATTERSEA EXPERIMENTAL SCHOOL.

"It appears to me impossible to over-estimate the importance of duly attending to the education of the pauper children, and to the fitting them for the stations they are likely to occupy in after life."

So says Mr. Tufnell, in his very able and interesting report, as one of the Assistant Poor-law Commissioners, on the Education of this Class: in which sentiment I cordially and entirely agree. And yet, if left to the discretion and judgment of but too many of those whose station in society seems to warrant an *assumption* of knowledge, if they have it not, what a mess would they make of the matter! Nothing is more common than for men, uneducated themselves, to inveigh against education in others, especially in the case of the poor and their children. One wealthy landowner of my acquaintance objected to it, "lest they should become as learned as we ourselves are!" Even at the hazard of such a catastrophe as that contemplated by my worthy friend, it appears to me, that education must and will go on; and clever "as we ourselves" may be, we shall have to keep a pretty good look-out, that we be not surpassed by the children of a well conducted parish or union school.

But herein lies the very pith and marrow of the business.

A well conducted school implies a competent master.

By competency, I do not mean, a mere proficiency in reading and writing; or even a knowledge of higher and more intellectual acquirements. To these ought to be joined a certain tact which will enable the teacher to maintain discipline in the school, without which, indeed, all attainments are useless. What is, or ought to be, the object of education in general? To fit the scholar for the business of life, and to enable him to secure the maintenance of himself and family in respectability and independence. I say nothing in this place, of those higher duties connected with his spiritual and eternal welfare. The individual, whether boy or man, will be at least in a fair way of attaining to the one, if he be well grounded in the other. The man who best unites domestic with intellectual knowledge is the best instructor of youth. He addresses himself, not merely to the memory, but to the understanding of those under his charge; and is not content with cramming them with incomprehensible jargon, but opens to them the book of nature, and from it deduces maxims, alike interesting to youth and important to manhood. But on this subject hear what is said by Vehrli, the manager of the Normal school at Kruitzland, in Switzerland, as detailed by Dr. Kay and Mr. Tufnell, who visited the spot.

"The course of life in this seminary is threefold.

1. Life in the home circle, or family life.
2. Life in the school-room.
3. Life beyond the walls in the cultivation of the soil.

"I place the family life first, for here the truest education is imparted; here the future teacher can best receive that cultivation of the character and feelings, which will fit him to direct those who are entrusted to his care in the ways of piety and truth.

"A well arranged family circle is the place where each member, by participating in the other's joys and sorrows, pleasures and misfortunes, by teaching, advice, consolation, and example, is inspired with sentiments of single-mindedness, of charity, of mutual confidence, of noble thoughts, of high feelings, and of virtue.

"In such a circle, can a true religious sense take the firmest and the deepest root. Here it is that the principles of Christian feeling can best be laid, where opportunity is continually given for the exercise of affection and charity, which are the first virtues that should distinguish a teacher's mind. Here it is that kindness and earnestness can most surely form the young members to be good and intelligent men, and that each is most willing to learn and receive an impress from his fellows. He who is brought up in such a circle, who thus recognises all his fellow men as brothers, serves them with willingness whenever he can, treats all his race as one family, loves them, and God their father above all, how richly does such a one scatter blessings around! What earnestness does he show in all his doings and conduct, what devotion especially does he display in the business of a teacher! How differently from him does that master enter and leave his school, whose feelings are dead to a sense of piety, and whose heart never beats in unison with the joys of family life!

"Where is such a teacher as I have described, most pleasantly occupied? In his school, amongst his children, with them in the house of God, or in the family circle, and wherever he can be giving or receiving instruction. A great man has expressed perhaps too strongly, 'I never wish to see a teacher who cannot sing.' With more reason I would maintain, that a teacher to whom a sense of the pleasures of a well-arranged family is wanting, and who fails to recognise in it a well grounded religious influence, should never enter a school-room."

These are the opinions of a man whose occupation was that of a trainer of teachers of pauper children, whose experience, in conjunction with the celebrated De Fellenberg, at Hofwyl, entitles him to great respect, and whose zeal is only equalled by his ability to carry out the principles which have deservedly gained for both the very high character they maintain, not in Switzerland only, but throughout the whole of Europe. It was with the view of obtaining information on these Normal schools, as they are called, that Dr. Kay and Mr. Tuffnell visited Switzerland, and the result of their labours will be found in the very interesting volume from which I have drawn the principal materials for the present article entitled "Report on the Training of Pauper Children."

But what, it may be asked, has the training of masters to do with the education of children? Just as much, as the foundation has to do with the walls of a house. "And," observe our authors, "men similarly trained, appeared to us best fitted for the labour of reclaiming the pauper youth of England to the virtues, and restoring them to the happiness of her best instructed peasantry."—Page 211.

Fully aware of the importance of reducing to practice principles, of the advantages of which they had just witnessed such extraordinary proofs, these gentlemen endeavoured by every means in their power, to attract the attention of the authorities to the subject, feeling painfully how inadequate were their own resources for the management of such an experiment; "but," they modestly add, "after various inquiries, which were attended with few encouraging results, we thought that, as a last resort, we should not incur the charge of presumption, if, in private, and unaided, we endeavoured to work out the first steps of the establishment of an institution for the training of teachers, which we hoped might afterwards be entrusted to abler hands. We determined, therefore, to devote a certain portion of our own means to this object, believing that when the scheme of the institution was sufficiently mature to enable us to speak of the results, rather than of anticipations, the well-being of 50,000 pauper children would plead its own cause with the Government and the public, so as to secure the future prosperity of the establishment."—Pp. 211, 212.

I should regret my inability to enter at large into the details of the new institution thus patriotically commenced, were not the volume within the reach of almost every person interested on the general subject of pauper education. Suffice it to say, that a suitable mansion and premises were engaged at Battersea, near London, "close to the Thames, and surrounded by a garden of 5 acres."

This garden, it appears, was a perfect wilderness at the time it was entered upon; and consequently presented a fine field both for the skill and bodily exertions of tutors and pupils, by whom the whole has been brought into a productive state. Cows, pigs, goats, and poultry have since been added to the establishment, all under the superintendence of the various scholars; for, as is observed, not less judiciously and benevolently, "the teacher of the peasant's child occupies, as it were, the father's place, in the performance of duties from which the father is separated by his daily toil, and unhappily at present by his want of knowledge and skill. But the schoolmaster ought to be prepared in thought and feeling to do the peasant-father's duty, by having sentiments in common with him, and among these, an honest pride in the labour of his hands, in his strength, his manual skill, his robust health, and the manly vigour of his body and mind."—Page 215.

But not the outward department alone, "the whole household-work was committed to the charge of the boys and young men; and for this purpose the duties of each were appointed every fortnight, in order that they might be equally shared by all." In short, the whole thing was an epitome of peasant life and labour, to which was superadded the advantages of intellectual employment and mental culture.

It may indeed be urged that the advantages thus given to pauper children have a tendency to do harm rather than good, by elevating them beyond their proper stations, and consequently that a master of far more moderate attainments would be vastly more suitable to the pupils under his care. This is an argument by no means warranted by facts or common sense. I say nothing of the inhumanity of such a theory; sufficient for me is its impolicy. If whatever is worth doing at all, is worth doing well, surely an object of such paramount importance as the formation of the character and habits of the labouring classes, is eminently deserving the most serious attention of their employers. It is a fact not less singular than important, that wherever objections have been made to the education of the poor, and whatever supposed evils may have arisen therefrom, such results may invariably be traced, not to *over*-learning, but to the want of *sound* learning—*to defective education* —in plain English, to the incompetency of the master. We are told—

> "A little learning is a dangerous thing."

Without vouching for the correctness of this axiom, which is perhaps more poetical than strictly true, because I hold that "half a loaf is better than no bread," it must be obvious that *sound* is better than *unsound* tuition; and I am well pleased that this opinion is rapidly extending itself throughout our nation. Not the least pleasing feature of the age is the readiness with which the government of the day is carrying out the designs of their predecessors in this important work. It matters not whether by Whig or Tory, let us be thankful if it be done. We may not, and most likely shall not, get all we might, nor all we ought: but shall we on that account refuse *any* portion of the good within our reach? With just as much common sense would a creditor spurn an instalment of five shillings, the very payment of which might in time lead to the discharge in full of the ten shillings owing to him.

Who can have read without shuddering the lamentable state of mental darkness, of which so many frightful proofs were, some time ago, detailed in the House of Commons, by Lord Ashley and Lord John Russell? Most earnestly is it to be hoped that the day is not far distant when the light of knowledge shall dispel the darkness of ignorance and vice; and when the want of intellectual cultivation among the poor shall be as great a matter of marvel as is the possession of it at the present day. George the Third wished that every poor man in his dominions could read his Bible. He did not live to see the accomplishment of his benevolent wish; but accomplished it will be, and probably before many years have passed away.

IMPROVER.

September 14, 1844.

CHEAP SPIRITS AND TEMPERANCE—NORWAY *v.* IRELAND—WHEAT FLY—HARVESTING BEANS.

It has often been a question with us, whether a very considerable reduction, or even a total abolition, of the duties on spirits would, in the long run, tend to the increase of drunkenness amongst us as a people. We say nothing of its financial, but only its moral effects, which latter we firmly believe would be favourable rather than otherwise to the national character.

We have been confirmed in this opinion by an article in No. 9, of the *British and Foreign Review*, on the "Social State of Norway,"—being a Review of Laing's "Journal of a Residence" in that country, "during the years 1834, 1835, and 1836."

"The distillation of spirits being unrestricted in this country," says Mr. Laing, "and carried on in every farm-house, renders the price very low, about 1*s*. 2*d*. sterling the gallon. I expected to have seen a great deal of drunkenness and disturbance in an assemblage of four or five thousand people of two distinct nations. This proved not to be the case. In the morning I have not seen one intoxicated person; in the evening the country people returning home appear elevated, or in liquor, as at our fairs, but not so as to be unable to take care of themselves. I have not seen one of the soldiers, a subaltern's party of whom are here during the fair, in the slightest degree affected with liquor, either on duty or off; yet the discipline is everything but strict. The only individuals I have seen thoroughly drunk, or in the state in which well-clad citizens may be seen staggering through the streets of Edinburgh every day, are the Laplanders.

"If the distillation of spirits from potatoes were allowed the Irish people, as here, where every one may distil without restriction, what would be the consequence? The whole nation would be drunk for the first fortnight, but the permanent consequences might be beneficial. It would give a positive value to a vast mass of property, the potato crop, which has now only the kind of negative value of being consumed by man and pig, in place of other more transportable kinds of food; it would make potatoes like grain, a saleable product. The growers could not consume it, as now, in breeding curly-headed boys and girls, but would distil part of it for use or for sale. If all restraints on the use of spirits were removed—and the artificial price occasioned by duties and excise regulations is, perhaps, the most exciting one—it is very possible that, after the novelty of the situation was over, the consumption would be less considerable than it is now. There would be no treating, no public-house drinking; for there would be no rarity nor difficulty in getting the liquor, which could be had at home at little cost. It would undoubtedly improve the condition of the Irish people, by giving valuable property to the poorest cotter out of a product which is now only applied to the rearing of a superfluous population; and notwithstanding the evil consequences of placing, as it were, the glass brim-full in the hands of the people, the good might counterbalance the evil."

"There is wisdom," observes the Reviewer, "in every proposition in the above extract. There is in the whole question one strong fact which cannot be got over; and it is, that in every country in the world cheap distilled and fermented liquors go hand in hand with sobriety, whilst drunkenness seems to be the offspring of the exciseman and his tax. In most parts of the United States whiskey can be had at 1*s*. 3*d*. or 1*s*. 4*d*. a gallon. In some parts it is as low as 10*d*. In Canada, common whiskey is at 1*s.* 6*d.*, rum sometimes as low as 2*s.* 4*d.*, and all spirits cheap. Now the Americans never were a drunken people. There *was* a road-side class, whom one met with in steam-boats and stages, who were fond of drams to keep up the steam, as they expressed it; but they have died away before the temperance societies,—and even they were not drunkards.

"And how did the temperance societies improve the people's habits (for improved them they certainly have)? Did they demand that spirits should be made costly by means of an excise? No: they relied wholly on the moral influences, and they have succeeded, which they would not have done, had they attempted to obtain their object by means of a tax.

"Look at the state of London: there spirits are taxed enormously, so as to render them high-priced, and yet there is drunkenness to be met with in all its most disgusting forms. But what is meant by a high price? Is a given price equally high to all? No: it has reference to income: a price which is high to the wretched outcast is, at all events, much less so to the artizan. Now if the argument that a high price prevents or checks drunkenness be good for anything, we ought to see the artizan drink more gin than the outcast, as he can afford it better. And why does he not? We have no better answer than, because he is not an outcast. Misery is, in fact, the parent of drunkenness: dram-drinking is resorted to, not for the positive pleasure, but for the negative pleasure which it affords, by dispelling misery. Every circumstance which improves the comforts and condition of the people, removes the motive to intemperance; and for this reason we agree with Mr. Laing, that the permission to distil without restraint would check drunkenness among the people of Ireland."

Mrs. S. C. Hall, in No. xvi. of the *New Monthly Magazine*, incidentally confirms this opinion: "I should have mentioned another advantage which Havre possesses over Liverpool, indeed over all our English towns—I never saw either man or woman intoxicated. Labouring under the scorching sun, and brandy so cheap that even an Englishman might intoxicate himself to his heart's content for three halfpence, they go soberly, if not quietly, to their beds, satisfied with their salad supper, or their cup of coffee. 'Have you temperance societies here?' 'No,' said the French lady of whom I inquired, '*We do not need them.*' I thought of the disgusting scenes produced by English drunkenness, and was ashamed for my country."

In the main, we are disposed to agree with the above facts, and the reasoning deducible from them. It does, to be sure, appear rather an

"Irish" method of checking drunkenness, to put the means of getting drunk in everybody's power; but we have no doubt its practical effect would be as above described. Are orchard robberies practised in cider counties? No, because the whole country is one vast orchard—apples are so common as to offer no temptation to indulge in them to excess. And would not the same effect attend the abolition of the game laws? Undoubtedly it would, and why? Because the chief value of game arises from the difficulty and expense of obtaining it. Were everybody allowed to sport unrestricted—in other words, were game made cheap and common, depend upon it partridges would be no more sought after than pigeons; and we are much mistaken if the same reasoning will not apply with equal force to cheap spirituous liquors.

As usual at this season much has been said and written on the subject of the wheat fly, red robin, or red gum, as it is sometimes called, which is, undoubtedly, an "agricultural pest" (as Mr. Poppy terms it) of no common magnitude; and appears, according to the testitomy of Messrs. Marsham, Kirby, Gorrie, Shirreff, and other intelligent naturalists and farmers, to have been first scientifically noticed about the year 1795. (See vol. iii. of the Transactions of the Linnæan Society.) Mr. Loudon, in the first vol. of his very interesting work, the Magazine of Natural History, "calls the attention of his readers to the subject of the wheat fly; and we believe is the first who has instituted a comparison between this and the Hessian fly, giving a wood-cut of each, side by side. The latter, it is well known, is a most formidable enemy to the wheat crop in America. And really, from the loud and general complaints we have heard of late years of our English wheat fly, we are not without our fears that it may in time rival its transatlantic brother of the *Cecidomya* tribe. The cause evidently seems to be a species of gnat or fly, which deposits its eggs in the flowers of the wheat plant; and the red or reddish-yellow maggots found in the ear are the produce of these eggs, and feed upon the embryo grain, to its entire or partial destruction. It would be well were the cure of this "plague of flies" as obvious as its origin. We are, however, highly pleased to notice in an advertisement of the objects of the English Agricultural Society, that this important subject has not been overlooked; for, under the head, "Insects injuring the Cereal Crops," we have the following notice:—

"Twenty sovereigns, or a piece of plate of that value, will be given for the best account of the insects prejudicial to the cereal crops, viz., wheat, barley, oats, and rye, in their different stages of growth. The description of the insects must be entomological, and any remedies proposed must be the result of actual experiment."

If the society accomplish but this one object, it will have been worth forming. Meantime we may notice a few of the remedies already suggested for this formidable enemy to the farmer. Mr. Kirby recommends fumigating the corn by tobacco and sulphur when the wind is in a favourable quarter; but it is obvious that this can only be accomplished on a small scale, and that even then success is very doubtful. An insect, however small, if closely esconced within the glume of an ear of wheat, may bid defiance to every attempt to dislodge him, except by fire as well as smoke.

Dusting the crop with fine quick lime has been advised. Of the efficacy of this, too, we have our doubts; though it has this advantage over the fumigating system, that if it do no good, it will do no harm. The lime ought to be applied in a very early stage of the attack of the fly, and when the plant is moist with dew or rain. Mr. Loudon, in his *Encyclopædia of Agriculture*, gives a description and sketch of a lime-duster, used, it is true, for another purpose, viz., destroying caterpillars and other depredators on apple trees; but it strikes us as not inapplicable to the wheat plant. At all events, no great harm would be done by trying the lime on a small scale.

Mr. A. Gorrie has a scheme for destroying them undertaker-wise. "Having," he observes, "succeeded in burying caterpillars of larger growth, I have no doubt but that the wheat maggot might be also got and kept under. This could be easily performed if, in ploughing the wheat stubbles, a scarifier or skimmer were fixed in the beam before the coulter, of such construction as would cut and lay about an inch of the surface in the bottom of the furrow; if this were done correctly, and the subsequent ploughing kept so shallow as not to touch the buried surface, it is not likely that the maggots could work their way up through the superincumbent soil."—*Quarterly Journal of Agriculture*, No. 8.

Mr. Gorrie goes upon the supposition that the maggots of the wheat fly bury themselves in the ground, and are preserved there safe through the rigours of our severest winters.

Now we are on the subject of corn, may we be allowed to ask a question? How does it happen that the farmers of this, our East Anglian district, are usually so very late in their bean harvest? As fine a sample of beans as we remember ever to have seen, were pulled more than a fortnight ago; of course when quite green. How much better is the stover than when suffered to stand till black and all but rotten!

Bury St. Edmunds, Sept. 13, 1844. T.

PURE SPRING WATER REQUIRED TO MAKE IRISH BUTTER EQUAL TO FLEMISH.

In regard to the necessity of having a pure spring of water in a farmer's yard, that is never thought of in Ireland. I may almost say throughout the country cattle perish daily from causes the owners never think of discovering, or making known to the medical practitioner: as to veterinary surgeons, there are none, I may state, in the rural districts (often quacks possibly), as any man of thought would instantly discover. The cattle often actually die of thirst. They are taken up a hill, over a heavy macadamized road, a mile or two, or double in most instances, there and back; or if not up a hill, down a valley the same distance, and when they reach the stream, after being driven into a bog, which the herdsman calls a mountain, at the bottom of the valley are a few inches of indifferent water, which in winter, with heavy rains, is a tolerable stream; but as no rain falls in most parts of Ireland (winter or summer) for 2, 3, or 4 months in the year, the cattle are continually suffering much from want of water. I have a letter from the central part of Ireland now before me, dated 16th inst., to this effect:—Butter is 84s. per cwt.; 9d. per lb. in the firkin; whereas six weeks back new butter from the same district (Kerry) sold at 64s. per cwt. in the Liverpool market. The same letter also states, that the rivers are so unusually dry that salmon and other fish are exceedingly scarce. There never was known so long a drought in the memory of the oldest man. This, too, in a river twenty to thirty feet deep, that runs fifty to sixty miles inland, there being no water in its tributary streams. It may not be generally known to English farmers, that the interior of West Britain (Ireland) is comparatively like a bowling-green—a dead level nearly; except ten miles from the sea-coast, there are few mountains or large hills; yet by a little labour wells can always be made, with a perpetual flow of water, and pure streams may always be brought through farm-yards, at little expense. I refer the scientific farmer to Dr. Buckland's Bridgewater Treatise, vol. 2, pp. 106-108, and plates 66, 67: he describes, in his beautiful study of geology, the Artesian wells—how a break in the earth and rock throws the water to the surface. Sections are given to prove how nature works in the interior of the earth, for the use, service, and advantage of man and beast.

At page 105, plate 67, a valley of denudation in stratified rocks or earth is shown by "the figure; it is intended to illustrate the causes of the production of springs, by *descent* of water from porous strata at higher levels. The first produces discharges in valleys of denudation (such as marshes and bogs), along the line of junction of porous with impermeable strata; the other by the interruption offered to descent of water by vaults that intersect the strata."

The object of this paper is to call the attention of farmers and proprietors to the necessity of having streams of pure water to pass through their farm-yards for their cattle, horses, &c. No doubt hundreds of thousands of stock of all sorts die from thirst and drinking impure water, in dry seasons, when the drought continues several weeks, and even months. A Cheshire farmer complains this month of having lost 20 cows, from drinking water that is supposed to be impregnated with guano, washed from his fields after a heavy shower of rain. He never supposed the pit was stagnant before the rain fell, and the carbon (soot) from the long drought washed into the pit, and the stagnant water floating at the top of the pit poisoned the cattle; and very probably a drain from the manure heap added to its venom.

On the healthiness of the milch cows, and the necessity of having pure water to make the butter, depends much as to the value, both of the beast and the produce. Why does the foreign butter bring so high a rate in the London market? We quote from the Mark Lane Express: —foreign 110s. to 120s. per cwt.; Irish butter 60s. to 84s. per cwt. Simply because it is made in a superior manner to the Irish. My opinion, however, is, that if the Irish farmers were equally as particular in the manipulation of their butter, they would reap the benefit of their extra trouble in obtaining a better character and consequently a better price for it; and if they did not get so much as is paid for the Dutch, they would realize considerably more than they do at present; indeed a farmer near me is now getting 140s. ℘ cwt. (1s. 3d. ℘ ℔) for every pound he sells—Mr. J. Hegan, of Bankfield Farm, West Derby, near Liverpool; his farm servant's name is William Rogers, from Wrexham.

JOSEPHUS LILLEY.

WEST DERBY, near Liverpool,
September, 24, 1844.

NOTICES OF NEW PUBLICATIONS.

The Veterinarian to September. London: Longman & Co.

We necessarily turn over the pages of this highly useful periodical to ascertain how the Royal College is progressing; and sorry we are to say that it is not satisfactory. The July number gives us a statement of the subscriptions up to the close of June, from which it appears the joint sum collected is only £602 11s. 6d; and, as the Veterinarian observes, "there is a very considerable sum to be collected in order to make up the £1000 that we were compelled to borrow, and we do entreat our friends to recollect it." This is bad enough certainly, but it is not the only matter that is unsatisfactory. It seems that on the 12th of July the president, Mr. Thomas Turner, was somewhat startled by the receipt of "a letter with two enclosures from the Secretary of State, announcing that petitions had just reached him from the Governors, Subscribers, and Trustees of the Institution, known by the name of the Royal Veterinary College, containing allegations directed against the charter recently granted by the Queen to the veterinary profession, to which he was desirous of drawing the attention of the President, and from him desired to learn upon what foundation the said allegations rested."

The charge is that alterations were made in the draft of the Charter after it had been approved of by Mr. France, the solicitor to the College, "tending to the prejudice and disparagement of the Veterinary College." The Council deny this charge, proving that but one trivial alteration was made, and that at the suggestion of Mr. France. And so at present the matter rests, for the September number of the Veterinarian states that—"We have not heard that any answer has been sent to the petition of the Governors of the Royal Veterinary College, mentioned in our last number; neither, up to the time we are writing, has any communication from the Secretary of State reached the Council; consequently the charter affair may be said to be still pending. Nevertheless our Council have not been idle. They have been meeting weekly, and doing their best to make such a code of by-laws as shall most efficiently and beneficially carry out the ends of the charter: looking neither to the right nor to the left, suffering their minds to be swayed by no bias, restricted in their endeavours to serve every professional interest to the full by the provisions of the charter alone, they have deliberately considered every law, examined one by one its clauses, and finally determined on its adoption only after the fullest conviction on their part that it was for the general benefit and advantage of the members of the veterinary profession. We regret that the schools should have manifested any opposition to the charter, and the more that they should have done so after the fullest understanding on the part of those under whose direction it was drawn up, that they had concurred in everything contained therein. We do not pretend to know the precise grounds on which fault is found with the charter; but this we do know and can vouch for—*that private ends were neither in thought, word, nor deed, sought after* by those who have laboured much and long to concoct and perfect an approved instrument. Surely that which tends to the good of the profession at large must tend to the advantage of the schools of professional education; and surely the more thriving the state of the profession the greater must be the demand for veterinary surgeons, and the greater the influx into the schools of pupils. It is no more the interest for the schools to set themselves up in opposition to the profession than it is for the latter to do anything to the injury of the schools: together they constitute but one house, and woe to that house if it become "divided against itself." Better, far better, adopt the motto of the Royal College of Veterinary Surgeons—*vis unita fortior;* for comparatively weak must be either party unsupported by the other: and though the profession may manage to erect and get licensed fresh schools, it will not prove so easy a matter for schools that have quarrelled with the profession to obtain the same support elsewhere. We say again, and say emphatically to both parties, pray remember that "*vis unita fortior est.*"

Let us therefore hope that these dissensions will be too short-lived and too harmless to be remembered, and that henceforth the institution will prosper as it deserves. We wish to see it placed on a firm basis; and we care not how soon that is accomplished. In the meantime we turn from further consideration of the subject, and from the July number present our readers with a very interesting paper on

"THE ATTACHMENT OF ANIMALS.

"*Contributed by C. Lee, Esq.*

"I witnessed a few weeks ago a strong example of conjugal attachment in a rook. We have a rookery here, and one day, hearing an awful cawing and noise, I went out, and found on enquiry that the rooks in fighting had struck one of their companions, and beat him (or her) to the earth. The poor bird was much hurt, and, I thought, paralyzed, for when I put him on the ground he fell on his side. The bystanders wished to put him out of his misery, as they called it, by wringing his neck; but I determined to give him a chance.

"I bribed the gardener's boy to take care of him and feed him, and had him put into a bushel basket with some peas and water. In a few days he was rather better, and I put him into the garden; and, going one morning to enquire after him, the gardener told me he was much better, and "his *Missus* had been to see him." And sure enough there was his mistress, or rather his wife (for I will not libel birds which set so good an example), perched on a little tree near him. Very soon the others came to pay him a visit, and he held a levee several times a day. He kept getting better and better, until one day he flew off to the rest; and I have no doubt I have seen him many times since. He rather mistrusted my good offices for a day or two, but after that he was not in the least degree frightened.

"I witnessed also, a few years since, a strong instance of sagacity in a horse. My father, who was seriously ill during several years, rode every day a beautiful and remarkably sagacious pony, but of such untameable spirit that he used to run away with, and throw off at times whoever got on his back. No sooner did my father approach to mount him, than he stood as still as the veriest jade could do; he only replied to the whip by a switch of his tail, never once shied, and never went out of a jog-trot pace.

"No sooner did any one else mount him than the scene was totally changed: he reared, bolted, and would not bear to be touched with the whip. At my father's death, we gave him (under restriction of being never parted with) to Sir Thomas Miller, a humane horse-master; but he ran away with the baronet, and threw the baronet's children. The groom was then sent on the downs to tame him, but he ran away with the groom, and after keeping him some months, Sir Thomas sent him back to us. He died, I am sorry to say, a year ago, or rather I had him destroyed, after vainly attempting to recover him from lock-jaw. He was about twenty years old, and as good as ever. A beautiful little tortoise-shell cat used to sit on his back day and night: he would put his head on the partition of the stall, and she would lick and clean his ears just as she did her own kittens. Before he died I had him removed to a loose box at a distance; the cat found him out, and in his last hours she left her usual haunts, and stayed with him. I had him honourably buried, and a weeping-willow marks the spot; but I never think without a pang of the sad end of an animal, whose equal (for his size) was scarcely ever met with."

The Sporting Magazine to September. London: Pittman.

It is extremely seldom we meet with an engraving in this publication that displeases us; "The Light of other Days," however, is of that class. Had our space permitted, we intended to have extracted that piece of drollery entitled "The Sailor's Yarn;" in lieu thereof, however, we furnish our readers with the following valuable information regarding

"*Russian Setters.*

"The engraving of the Russian Setters is from a picture painted by Mr. Steers, an artist of some promise, and taken from a brace of dogs belonging to Mr. Lang, the gun maker. An account of them appeared some three or four years ago in a periodical; but since that time the dogs have been well tried against some of the first kennels in England, at grouse, partridge, and all kinds of game, in which they had not only beaten their dogs very considerably in nose and sagacity, but in temper and lasting qualities nothing can excel them. Mr. Lang is, we believe, well known, not only as an excellent shot at game of all kinds, but also as a first-rate sportsman; and few men have gone to greater expense, and paid more attention to the breeding and crossing the breed in dogs, than he has.

"It was the surprise of many noblemen and gentlemen last year on the moors, when the sun would almost cook a rump-steak, to see these dogs find their game when no others could touch on it, and at the end of a long day were quite as fresh in appearance as when they went out in the morning; indeed these dogs have shown themselves superior in nose and stanchness to any English dogs that have been pitted against them, and seem to have much more sagacity in finding their game.

"As young sportsmen prefer their pointer or setter as fast as greyhounds, or, as an old sportsman would say, like 'oil'd lightning,' Mr. Lang recommends the Russian to be crossed with the English setter, and for moor-shooting, particularly the Highlands, where birds lie well, they are best; but for bird-shooting, if they go so fast, they must frequently run into or over their game.

"An old sportsman who had one of these dogs last year seems quite in raptures with them, and says in his letter, 'I firmly believe she has not a fault. I see you were quite right in sticking to the Russian setters: they are certainly the best to kill game to, have infinite sagacity, great powers of endurance, and instinct, and will, in short, do anything you like.'

"As a proof of their goodness Mr. Lang has sold several young dogs at twenty guineas each, and refused fifty guineas to Colonel Charritie, for one he shot to on the moors; and in a trial with two other dogs he got, in the middle of the day, when the sun was extremely hot and the scent bad, three *points* to either of the others one."

The Alpaca, its Naturalization in the British Isles considered as a National Benefit, and as an Object of immediate utility to the Farmer and Manufacturer. By William Walton. Edinburgh: Blackwood & Sons.

Mr. Walton again appears before us as the able advocate of the merits of the alpaca, and, we think, with additional chances of success. He has spared no pains to amass the most desirable information of the habits and valuable properties of that animal; showing the nature of the climate in which it is reared, and comparing it with that of the British Isles; and proving the alpaca to be most admirably fitted for the hill-farms of these Islands.

If the animals could be furnished at a much lower cost to the farmer than has hitherto been the case, we have no doubt that they would be far more extensively bought up, and be much oftener seen. At present they are very costly: the rich may, but the poor farmer cannot afford to buy them; and we fear their introduction will proceed very slowly until the price be very considerably reduced.

To those, however, seeking for information concerning the alpaca, we especially recommend the neat little volume before us, as one that will furnish all they wish on that head; and we sincerely hope that it will accomplish the object for which it was written.

Chapters on Working People: how to Elevate their Morals, and to Improve their Social Condition. By Benjamin Love. London: Simpkin, Marshall & Co.

If a name would disarm prejudice and lend an additional charm to the book, that of the author before us ought to do so; and we must admit, that on taking up his pamphlet we were scarcely prepared to find the treatment of the subject in such due keeping with his name.

In his preface Mr. Love observes that "whatever tends to bring the wealthier classes into friendly contact with the labouring population, and to interest them in each others' welfare; whatever tends to improve social habits, and so to induce domestic happiness; to elevate morals, and so to promote the observance of religious duties; cannot be unworthy the notice of all well-wishers to their fellow-men."

In place of seeking for the extent of immorality, our author proceeds to suggest means for its cure. He believes that morality is not the result of mental education, but rather the fruit of religious training; and in conformity with this belief he would prefer that system which included both. He deplores the want of friendly intercourse and sympathy between employer and employed, and believes, if the employer would exercise his friendly influence, its effects on his work-people would prove most powerful. He thinks, as vice is punished, so virtue should be rewarded, and "he would, therefore, offer annual premiums, on a graduated scale, to the male labouring population, for industry, frugality, temperance, general good conduct, bringing up a family on limited means, without parochial relief; and to the female, for cleanliness, domestic management, sobriety and housewifery, and for the clean and regular appearance of their children at Sunday-schools or places of worship." And he believes that if the ministers of all denominations would exert themselves in visiting the people at their homes, that these means would effect a great improvement in the social condition of the working population.

The pamphlet contains much that deserves consideration, and the subject is of sufficient importance to demand attention; for "The labouring population of England comprise her strength; they produce her wealth; and therefore their social and moral condition should be the *first* consideration of our rulers."

TO OUR SUBSCRIBERS, CORRESPONDENTS, &c.

On and after the 1st January, 1845, the British Farmer's Magazine will be published by Mr. Henry Wright, 51, Haymarket, London; we shall therefore feel obliged if our Correspondents and others will forward their parcels for the Magazine to his address.

THE BRITISH

FARMER'S MAGAZINE.

New Series.

VOL. VIII. JANUARY, 1845. NO. XXXII.

PETITIONS TO PARLIAMENT ON THE POOR-LAWS, &c.

Sir,

I beg to offer you the annexed petitions to parliament for your perusal, and should you think them entitled to a place in your Periodical, please to insert them. That petition recommending some new provisions in the poor-laws, and the petition praying that parliament would call upon the Poor-law Commissioners at Somerset House to give their opinion on my scheme for enabling the working classes to provide for old age, have been presented to the House of Commons by men well known to the public.—I am, Sir, your obedient servant,

Cadogan Williams.

Bridgend, Sept. 9, 1844.

To the Commons of the United Kingdom.

The humble Petition of Cadogan Williams saith,

That your petitioner understands it is the opinion of some worthy persons that the legislature exceeds its legitimate authority when it enacts laws to take away human life. Whether that be the case under all circumstances, your petitioner is not prepared to give an opinion; but you petitioner is struck with the uncalled-for practice, when the laws have directed that an execution should take place, that it should be made a public exhibition. For what are the effects produced? They excite the morbid interests of the depraved, who may be found in considerable numbers as lookers-on on such occasions, as has been reported with respect to the calamitous Nottingham execution:—"That the awful spectacle had little effect on the surrounding multitude—that the coarsest language was freely used; and ribald jest, followed by rude laughter and brutal language, might be heard on every side during the whole morning." Your petitioner does therefore pray that your Honourable House will enact laws so that executions should take place in the prison yards; and to prevent any question arising as to the due course of the law, that all jurymen should have the privilege of being present.

And your petitioner will ever pray.

To the Commons of the United Kingdom.

The humble Petition of Cadogan Williams saith,

That your petitioner has had some experience in the working of the old poor-law, and was of opinion that it required some modification, notwithstanding he considers that the new poor-law should allow of no alternative between no relief and the Union House as revolting to humanity. Your petitioner does therefore pray that your Honourable House will cause a law to be enacted, that no family should be obliged to go into the Union House until they had been relieved for twelve months at least, according to the old law: for your Honourable House must know, that, during the existence of the old law, all were relieved with little discrimination, and that it must be very harsh that when misfortune has overtaken those who are necessarily nearest the verge of indigence, that they should not have assistance to right themselves, but should be forced to lose their social standing and become reckless. Your petitioner thinks that all power regarding the poor should not be centered in the Poor-Law Commissioners and Guardians, as it appears likely to be the case, so that the duties of the Overseers and Churchwardens, as respects the poor, are likely to become a dead letter. Your petitioner does pray that your Honourable House will cause 15 per cent of the poor-rates to be at the disposal of the vestries of the kingdom as heretofore, to meet casualties and other purposes for the benefit of the poor, that all sympathies between those who assist and those who receive should not be wholly destroyed.

And your petitioner shall ever pray.

To the Commons of the United Kingdom.

The humble Petition of Cadogan Williams saith,

That your petitioner has observed from newspaper accounts that in some instances where steam-boilers have exploded, that it has occurred that persons who were near at the time have escaped without being hurt, from which circumstance your petitioner thinks that had steam-boilers a double case, or were on board steam-vessels enclosed between strong bulk-heads, it would give the steam, in the event of explosion, an upward instead of a lateral direction, and would prevent such calamitous effects as took place lately in a steam vessel at Rio de Janeiro. Your petitioner begs to state in confirmation of his views, that some years ago a steam-boiler burst in the neighbourhood of Bath, and though the roof of the house it was in was carried to a distance, yet two men who were near it at the time were not hurt, which your petitioner attributes to the sides of the boilers remaining entire, and giving the explosion an upward direction. Then something similar occurred in a calamitous explosion that took place some years ago in a Hull steamer. Then what took place lately at Bolton? for had the steam-engine been placed in the mill instead of an adjoining shed, the consequence of the explosion must have been more calamitous. That your petitioner prays your Honourable House will cause the business to be investigated, so that it may be ascertained whether or not all steam-engines should not be placed in sheds adjoining mills, or that in steam vessels they should not be enclosed within strong bulk-heads, so as to secure, in case of explosion, that it should take an upward and not a lateral direction.

And your petitioner shall ever pray.

To the Commons of the United Kingdom.

The humble Petition of Cadogan Williams saith,

That your petitioner has agitated a scheme of great importance to society, inasmuch that were it carried into practice it would afford the working classes an opportunity of providing for old age in a way they do not at present possess, and that by a mere exchange of equivalents, and without cost to the rich; and a committee of the House of Commons have reported "That the subject has occupied the attention of some of the best and wisest this country has ever known." Your petitioner has communicated his ideas on the subject to the Poor-Law Commissioners at Somerset House, whose public duty must be to do all in their power for the benefit of the working classes, and consequently was entitled to a candid answer to his letter, but your petitioner received a reply evasive and different from what he might have expected from men whom the law has appointed to dictate to every Poor-Law Union in the kingdom.

Your petitioner does therefore petition your Honourable House will call for the correspondence that has taken place between the Poor-Law Commissioners and your petitioner, and that they, the Poor-Law Commissioners, be requested to make known their opinion with respect to your petitioner's scheme.

And your petitioner shall ever pray.

SHROPSHIRE PRACTICAL FARMERS' ASSOCIATION.

On Wednesday, the 9th October, the general annual meeting of the above association was held at Shrewsbury. A ploughing-match took place in a field belonging to Mr. Richards, in the morning. The ploughing, owing to the dry state of the ground, was not so good as on former occasions, but the stock exhibited could not be surpassed. The judges of farm husbandry and ploughing were Mr. J. Meire, of Norton, and Mr. Dodd, of Bagley. The gentlemen who decided the merits of the stock were Mr. Bache, of New-house, Ludlow; Mr. M. Jones, of Stanmow, near Montgomery; and Mr. Walker, jun., Knightbridge, near Worcester. At the close of the exhibition Mr. Smith, auctioneer of the association, disposed of 25 pure-bred Alderney and Guernsey in-calf heifers, selected and imported by Mr. Fowler, of Stanmore, Middlesex. The sale appeared to excite great interest, but the biddings were far from being spirited, the average price being about £12, though most of them were very promising beasts.

In the afternoon a public dinner was provided at the Lion Hotel, at which the Hon. R. Clive took the chair, supported on his right by the Earl of Powis and J. A. Taylor, Esq., and on the left by the judges—Mr. J. Meire, Mr. Dodd, Mr. Bache, Mr. Jones, and Mr. Walker, and the secretary of the society, J. W. Bythell, Esq. About 150 gentlemen sat down. The usual loyal toasts having been given,

The chairman proposed "Success to the Shropshire Agricultural Society." With regard to the stock exhibited that day, it was fit to be compared with that of any other local association in the country. In reference to the cattle, one animal (belonging to Mr. T. L. Meire, of

Cound) had attracted considerable attention, and he should say could not be surpassed. He would briefly refer to the Royal Agricultural Society, as it was owing to that association that the one over which he had presided during the last 12 months was enabled to establish itself. The plan of the Royal Association, holding their meetings one year at one place, and another year in a distant one, he considered very beneficial, and calculated to confer great advantages upon the various districts in which the assemblages took place. In order to show how these exhibitions were sanctioned, he would state that there were upwards of 1000 yards more of ground occupied this year at Southampton under the exhibition than had been at Derby last year. That society would visit them next year; still he would advise them by all means to avail themselves of every meeting of that kind which they could attend. He would advise them to inspect the stock and implements, and judge for themselves, and not go by what other people might say, and then they would be better capable of judging of the effect of the improvements suggested. He would now refer to his own farming, as he was anxious to impart what he conceived might be a benefit to those around him. He had derived much information from Mr. Smith, of Easton, and by which he had been enabled to obtain good crops, and keep his farm more like a garden. Although this had been a trying year, he had 20 acres of good turnips out of 30 which had been sown. One of his barley fields, which had been drained, in consequence of the drought, had not been so successful. but on a future occasion, with good seeds, he hoped to succeed. His system had been subsoiling and draining for a couple of years, or more, as circumstances required, and in every instance he had succeeded, in average seasons, to the utmost of his wishes. He knew there was a great prejudice against subsoiling, in consequence of the strength required, and perhaps he was wrong in doing so much at once; but, having strength, he was determined to see what could be done, and he considered it had paid him a good return. Where parties had not much strength he would recommend them to do the subsoiling from year to year till they had got the depth they required. The hon. gentleman then referred to a tile-machine which had been exhibited, for making tubular tiles of one inch and a half in diameter, which he had been informed would be of as much service as if they were larger. He had been informed that they could be made at a very cheap rate, and burnt at about 10s. per thousand—that was supposing they had good clay, good kilns, and men who understood the work. He would now address a few words upon the advantages of guano. He held in his hand a letter from a Scotch gentleman, who stated he had sown 200 or 300 cwt., and found it had gone as far as double the quantity of manure usually employed. He applied it to hay, potatoes, &c. The potatoes had realised 10 tons to the acre, besides the smaller sized, which were excluded as not being saleable. If, therefore, that crop could be thus realised, it fully justified the use of guano. To those parties who required it he would say, join together, and purchase a portion of a cargo; it would be much the best way, as they would then get the material without adulteration. There was another subject to which he wished to refer—that was, the proposed agricultural college in order to train up young men to make good farmers. It was his intention to become a subscriber to that institution, and if any of the members of that society wished to place their sons in the college, he (the chairman) should be most happy to forward their views. He felt confident, that by the aid of such instruction as would be afforded at that college, a young man could become truly useful to himself and others. There was another subject on which he would make a few observations, and that was the welfare of the labouring man. He would say, give him a good house and a little land, by the cultivation of which he might benefit his family. Let the labourer have a fair day's wages for a fair day's work; it was his right. In conclusion he would say, let landlord, tenant, and labourer join hands together, The population was increasing—let them meet the demand consequent upon it, and make four blades of grass grow where only two sprang up before. It was by that way they must maintain their position, as no act of parliament could keep the price as they wished.

The chairman then said he had received a letter from the secretary of the Royal Agricultural Society, requesting their co-operation in making arrangements for their next annual meeting, at Shrewsbury. The society also requested a grant from them, to meet the expenses; and he (the chairman), taking into consideration that a Cheshire society had offered a handsome sum if the Royal Society would meet in that district, thought something ought to be done; and, although the funds of the society were not available for that purpose, he would recommend the members and friends to join in the subscription which was being made, and which already amounted to about £400.

Sir B. Eyton proposed "The Health of the Chairman." The chairman returned thanks, and proposed "The Health of the Vice-Presidents."

R. A. Slaney, Esq., returned thanks. He congratulated them upon the fact that the Royal Agricultural Society of England, after considering the claims of two counties, had thought proper to decide that they would come amoug them next year. He had no doubt the Royal Agricultural Society had come to that determination owing to the exertions of the honourable gentleman who was now presiding among them. He himself, too, had done what he could, and had spoken in favour of Shropshire ale, and Shropshire hospitality; and when the members of that association did come, he hoped the gentlemen then around would show his was not an empty boast. Mr. Slaney then made a few observations upon the subject of draining, which he warmly recommended should be paid great attention to by the farmers of Shropshire, and alluded to the tubular tiles made by Mr. Clayton, which did not require any support at the bottom, and could be made at a light expense by the machine for that purpose, which they had probably seen.

J. A. Loyd, Esq., Viscount Newport, and Viscount Clive, also returned thanks.

The chairman then proposed "The Health of the Judges," for which Mr. Dodd returned thanks.

It was then announced that the premium of £10 for the best cultivated farm was awarded to Mr. Austins, of Montford, a tenant of the Earl of Powis.

Mr. Meire said, though Mr. Austins' farm was some distance from them, he could assure the gentlemen present they would be amply repaid if they visited it. He considered it was the best cultivated farm in the county in every respect, as far as the nature of the soil would permit. The landlord appeared to have done much for the tenant; there were no high hedges or useless timber on the ground; no little scrubby trees that were not worth sixpence to the landlord, and did great injury to the tenant.

Mr. Dodd said he perfectly agreed with his friend who had just spoken of farms. With respect to turnips, he had found many acres of them that did great credit to the parties who grew them. They were free from weeds, and he must say he had seen some acres equally free of turnips. It was frequently the case that the seasons beat the British farmer out, and in this article the stock for the winter would be very deficient. He had observed, in some instances, that parties had lost sight of one thing, which was the cleaning of the land in such a manner as to be of service to future crops; to that he would draw particular attention.

On the name of Lord Hill being called over, the secretary stated that the prizes which had been awarded to that nobleman were again presented to the society.

Mr. Loyd proposed "The Health of the Earl of Powis."

The Earl of Powis said he hoped that the visitation of Providence in the past season would be of service to them. He hoped that as christians and men they would turn it to advantage by being careful of what they did possess, and that the ensuing season would enable the farmer to meet the serious inconveniences he had been lately put to. He could assure them he had no greater pleasure than to see such men as had been alluded to have their merits fully known and appreciated.

"The Health of John Coates, Esq.," president for the ensuing year, was then given, and that gentleman having returned thanks, the following prizes were announced:—

Best cultivated farm, £10, to Mr. Austin, of Montford.

Crop of Swedish turnips (not less than 10 acres), £6, to Mr Crane, of Shrayden; second best crop, £5, to Mr. Austin, of Montford.

Herefordshire bull calf, under one year old, £5, to W. H. Oatley, Esq., Wroxeter.

Herefordshire yearling bull, £5, to Mr. Gough, Gravel Hill.

Short-horned bull calf, under one year old, £5, to Lord Hill.

Short-horned yearling bull, £5, to Lord Hill.

Bull of any breed, not less than three years old, £5, to W. Allen, Esq., of Unckleton.

Pair of two years old steers of any breed, £5, to Mr. T. L. Meire; second best, £3, to Mr. J. Meire.

Pair of yearling steers of any breed, £5, to Mr. T. L. Meire; second best, £3, to Mr. J. Meire.

Pair of two years old in-calf heifers, £4, to Mr. J. Meire.

Pair of yearling heifers, £3, to Mr. J. Griffiths.

Fat ox, £4, to Mr. T. L. Meire.

Fat cow, £4, to Mr. T. L. Meire.

Stock cow, £3, to Mr. T. L. Meire.

Stallion for agricultural purposes, £4, to Mr. T. Morris, of Perril.

Long-woolled yearling ram, £4, to J. Griffiths, Esq., of Cound.

Pen of five breeding ewes, £3, to Mr. T. Salter.

Short-woolled yearling ram, £4, to Lord Hill.

Pen of five breeding ewes, £3, to Lord Hill.

Pen of five breeding ewes of any other breed, £3, to Mr. S. Matthews.

Ram of any breed, £4, to W. H. Oatleigh, Esq.

Pen of five fat yearling wethers, £3, to Mr. S. Matthews.

Boar, £2, to Mr. J. Meire.

Breeding sow, £2, to Mr. Bickerton, of Newton-on-the-Hill, for a Neapolitan sow.

ANNUAL MEETING OF THE LIVERPOOL AGRICULTURAL SOCIETY.

The fourteenth anniversary show of this society was held on Tuesday, the 22nd of October, in a field at the top of Sackville Street, near the North Haymarket. The day was remarkably fine, and the attendance was numerous. The cattle show was superior to that of last year.

We are sorry to learn that the funds have been insufficient to meet the demands of the society, and that the premiums have been reduced in order to pay the debt due last year, but still the society is so poor as not to be able to print the list of premiums, &c., for general distribution. On looking over the list of subscribers we find the names of many large landowners, and gentlemen of fortune, with a paltry pound or two attached to their names. Let the rich follow the noble examples of the Earl of Derby and the Earl of Sefton, and raise their subscriptions either to ten guineas, or to sums worthy of their possessions. Instead of reducing, we should recommend an increase of the number of premiums, both for live stock and crops. Every industrious farmer has great pride and pleasure in possessing either a superior animal or crop. Let the landowners encourage this pride by increasing the number of prizes, for they are more deeply interested in improvements than the farmers themselves; indeed, the farmers, as a body, are but ill requited for their labour, and to those of small means a few pounds are of great importance. The society, from its commencement, has been well and liberally supported by the press, and to this powerful machine it is much indebted for its popularity. We have annually incurred considerable expense in reporting the proceedings, and devoting our columns, at great inconvenience and sacrifice, by inserting the reports and list of premiums free of cost to the society, whilst, in other towns, such matter is not inserted in the newspapers unless paid for as advertisements.

There were some very prime bulls, bull calves, milch cows, heifers, fat cows, and young cows. The show of stallions was rather indifferent; there was plenty of bone and flesh, but a great want of symmetry and action, with power. There was a beautiful gray saddle horse, belonging to Mr. Hustler, of Orrell Hall; a considerable number of draught horses, amongst which was a pair of very powerful grays and a very fine black powerful gelding; and a few brood mares and colts. The show of pigs was never excelled, either in number or quality. The sheep were more numerous than formerly, and there were several excellent specimens of Leicesters and Southdowns.

Mr. W. Ashcroft, of Halsall, exhibited good specimens of mangel wurzel, weighing 26 lbs.; good sound Swede turnips, 28 lbs.; white Waterloo wheat, of excellent quality; and some chicory, the seed of which he has this year succeeded in bringing to maturity. Mr. W. Taylor, of Bootle, showed some sound drum-head cabbage; one weighed 54 lbs.; he had also some good mangel wurzel. There were some fine Swede turnips, and mangel wurzel, weighing about 30 lbs., belonging to C. Scarisbrick, Esq. Messrs. J. & C. Whalley showed good samples of globe mangel wurzel, Swede turnips, and some excellent pears, &c.

There was a great variety of ploughs and other implements adapted for agricultural purposes. Mrs. Cartmell, of Liverpool, exhibited her improved mills for crushing beans, corn, &c., hay and straw-cutting machines, a zigzag harrow, &c. Mr. James Richmond, of Salford, exhibited a model of an improved double churn, also an improved apparatus for steaming food for cattle, and various implements. Mr. W. K. Peake, of Liverpool, had several neat specimens of iron hurdles gates, &c. Messrs. Ireland & Longton, of Manchester, exhibited a very ingenious and useful portable fire-engine, which would raise water forty feet high when worked by two men. We understood the price to be £20, completely fitted up for working. Mr. Laycock, iron-merchant, of Liverpool, exhibited a remarkably well-constructed neat-looking iron shed, which was well adapted for agricultural purposes.

Mr. E. J. Pemberton, of Sankey, who obtained prizes both this year and last for draining, and who was formerly an inspector for the society, exhibited a model of his cinder drains, for the purpose of comparison with a tile drain. It appears, from experiments made by this gentleman, that a drain, thirty inches deep, with cinders ten inches deep, can be made for sixpence per rod of eight yards; and when the drains are 4¾ yards apart, the cost will not be more than £3 2s. 6d. per statute acre. Cinders, laid ten inches deep, will absorb twice as much water as a tile will contain which is 3½ inches wide and 3½ inches deep. Mr. Pemberton has drained forty-three acres within the last three years, with 38,404 yards of cinder drains, and 3850 yards of tile drains, the latter being used for the mains. The effect has surpassed his own expectations, and is stated to be particularly worthy of notice.

THE SECRETARISHIP.

It was the intention of Mr. Ledger to have resigned the office of secretary, but, at a meeting of the committee, he was induced to act for another year, as joint secretary with Mr. White, of Warrington, brother of the late Mr. White, the original and indefatigable secretary of the society.

REPORT OF THE COMMITTEE FOR THE YEAR 1844.

In giving an account of the state of the society on the present occasion, it is with feelings of gratification the committee are enabled to state that the debt, with which it has for some years been encumbered, is now discharged. This has been accomplished by the very handsome donations of the patron, the president, and other members of the society (to which allusion was made in the report of last year), and to the exertions and influence of Mr. Richard Earle, to whom the committee, and the members generally, are under the greatest obligations.

It is with considerable satisfaction the committee can now confidently state that the annual subscriptions and other receipts, are amply sufficient to meet the current annual expenditure.

The alteration made in the rules last year, by which competitors for the prizes offered for best cultivated farms and crops were required to be *subscribers*, has had the effect of slightly diminishing the number of those competitors, but it has, in the same ratio, given the subscribers claiming the prizes a better chance of success.

No charge has been made this year to subscribers for entry of their stock, which will account for the receipts in that department being less than usual. Non-subscribers have been charged 2s. for each entry, and the amount received is £14 16s. 6d.

Abstract of the Treasurer's Account, for the Year ending 31*st July,* 1844.

RECEIPTS.

Subscriptions	£397	17	0
Donations (for List see Appendix)	424	1	0
Admission of Non-Subscribers to the Show yard, 1843	106	14	6
Entry of Live Stock, Implements, &c., 1843	21	4	0
	£949	16	6

PAYMENTS.

Balance due to the Treasurer, 31st July, 1843	£106	17	1
Premiums awarded at the Annual Meeting in 1843	254	8	0
Advertising, Printing, &c. (including a balance of an old Account—upwards of £300)	390	15	3
Salaries of Secretary, Treasurer, and Inspectors	97	5	0
Expenses of Rooms for Committee and Annual Meetings, Dinner Tickets for Judges and others	32	13	3
Travelling Expenses of Judges	13	5	0
Expenses of Show-yard (including an old Account of £18)	40	13	10
Miscellaneous Expenses, Postages, &c.	9	16	3
	945	13	8
Balance due from the Treasurer	4	2	10
	£949	16	9

APPENDIX.

A List of Donations towards Liquidating the Debt of the Society.

The Earl of Derby	£100	0	0	Sir T. B. Birch, Bart.........	£5	0	0
Lord Stanley	25	0	0	Richard Willis, Esq..........	5	0	0
The Earl of Sefton..........	25	0	0	Mr. J. Lathbury and Friend ..	5	0	0
Lord Skelmersdale...........	25	0	0	S. Sandbach, Esq.............	5	0	0
Charles Scarisbrick, Esq.....	25	0	0	Mr. Cannell	5	0	0
J. Wilson Patten, Esq.......	20	0	0	P. Greenall, Esq.	4	0	0
Sir John Gerard, Bart.......	10	0	0	J. N. Walker, Esq...........	2	0	0
J. I. Blackburne, Esq.	10	0	0	Thomas Lyon, Esq.	2	0	0
Richard Watt, Esq..........	10	0	0	J. H. Leigh, Esq.............	2	0	0
J. P. Heywood, Esq.........	10	0	0	Thomas Littledale, Esq.......	2	0	0
T. Brocklebank, Esq.........	10	0	0	Richard Edwards, Esq........	2	0	0
T. Weld Blundell, Esq.......	10	0	0	Wm. Gerard, Esq............	1	1	0
Mr. Wm. Laycock	10	0	0	H. Littledale, Esq............	1	0	0
Henry Houghton, Esq.......	10	0	0	Mr. Rothwell, Winwick	1	0	0
Thomas Leigh, Esq.	10	0	0	Mr. Radley	1	0	0
Lord Francis Egerton	5	0	0	COMMITTEE.			
Samuel Taylor, Esq.........	5	0	0	John Formby, Esq.	1	0	0
Hon. R. B. Wilbraham......	5	0	0	Dr. Sillar....................	1	0	0
B. H. Jones, Esq...........	5	0	0	Mr. M'Farlane	1	0	0
John Shaw Leigh, Esq.......	5	0	0	Mr. Ledger	1	0	0
Henry Ashton, Esq..........	5	0	0	Mr. James Green	1	0	0
H. Blundell, Esq............	5	0	0	Mr. Moult	1	0	0
Wm. Blundell, Esq..........	5	0	0	Mr. Ashcroft.................	1	0	0
Sir R. Brooke, Bart.........	5	0	0	Mr. Lowndes.................	1	0	0
C. Fletcher, Esq............	5	0	0	Mr. Tebay	1	0	0
Mr. E. J. Pemberton........	5	0	0	Mr. Rose....................	1	0	0
Richard Earle, Esq.........	5	0	0	Mr. Rothwell................	1	0	0
				Total..................................	£424	1	0

REPORT OF THE INSPECTORS OF FARMS AND CROPS.

Having laid before the committee and the other members who have attended the annual meeting an account of the crops and cultivation of those farms which we have been called upon to inspect, it now becomes our duty to make a few remarks as to the state and progress of agriculture in the district, so far as we have had opportunities of judging, during the past year.

We are happy to say the *drainage of land* is greatly on the increase; at the same time, we must confess, very much remains to be done. The expense of this improvement is so great, that it cannot be expected it will either be *effectually* or extensively done by the tenant, and especially by the tenant occupying from year to year, under a law or custom which allows him nothing for his improvement in the event of quitting. It appears to us desirable, for various reasons, that the expense of draining should be borne wholly by the landlord, upon some reasonable terms to be agreed upon. One of the most important of these reasons is, that the drainage is more certain of being done; not in a temporary, but in a permanent manner, and not partially, but thoroughly, and so that the whole of the rain water shall percolate through the soil into the drains on the spot where it falls, and the expensive operation of guttering be entirely dispensed with. The noble patron of this society has for some years practised what we are now recommending, and has drained, during the year ending June last, between eight and nine hundred acres, with 1,560,386 tiles of the small size, and 164,755 of the large size, and along with which were used 1,818,978 soles of slate. The length of these drains was 307 miles and 849 yards, and the total cost for labour and materials was £5374 5s. 11d. In addition to the above, 137,930 tiles of the large size, and an equal number of soles, have been used in the filling up of old ditches, at a cost of £434.

Whilst on this subject we would notice, that draining on the Deanston system (down the furrows), with drains from four to seven yards apart, is now the most practised, and, we believe, answers better than any other. The cutting of drains *deep* is evidently more approved of, and we think the society has adopted an excellent rule, in requiring that all drains for which their prizes are given shall, if sufficient fall can be had, be not less than 30 inches deep.

Judging from the additional claimants for *marling* this year, it would appear the practice is on the increase.

We regret there have been no claims made for the planting of white thorn hedges; it must not, however, be inferred from this, that this description of improvement is declining, as we have seen on several farms in the district works of this kind going on upon an extensive scale, and that it is generally accompanied with the eradication of old hedges, and most of the timber trees, and the formation of fields of an extent more suited to the size of the farm and its rotation of cropping, and affording much greater facilities to the farmer in the occupation of his land.

It may, perhaps, be expected we should make some remarks as to the crops. It is difficult to give a faithful account of so extensive a district as that of this society; but, from what we have seen, we think the *wheat* crop has been generally good. *Oats* have been a light crop. *Barley* short in the straw, but quite an average, and good in quality.

Beans, after promising fair for a good crop, did not realise the farmer's expectations; this may probably be attributable to their being attacked with an insect, consequent upon the dry season, and just at the time of their going out of flower. The season for gathering the corn crops was unusually early and favourable, the harvest having commenced on the first week in August, and the principal part finished by the first week in September.

The *hay* crop has been unusually light this summer, and the pasturage very short, which is accounted for by the long drought of May and June. The deficiency has, however, in some degree been supplied by the second crops of clover, which have not only been good, but generally well got, and by the abundant supply of after-grass.

Potatoes, in many instances, did not vegetate well, and the consequence is, a partial failure in the crop. There are, however, in many places, apparently good crops. We regret to state that the rot—a disease which the farmer is still at a loss how to account for or prevent—has again made its appearance.

Turnips have been sown this year to a greater extent than usual, but perhaps never came up worse; and there are now many acres of land in a comparatively naked state, where second and third sowings and transplantings have failed. All this is naturally attributed to the drought. But it seems only right to state, that even this year there are at present many flourishing crops of Swedish turnips, and perhaps few more so, considering the extent, than the crop of Mr. Robert Neilson, of Halewood, which has recently come under our notice.

In a field of clayey loam, of 30 statute acres, there are growing 18 acres of transplanted turnips, and 12 which had been sown: the whole, with the exception of about 1 acre of the sown turnips, are looking remarkably well. Mr. Neilson watered the transplanted turnips during the drought, in a very economical manner, with a mixture of guano and water, and to this he attributes his success.

Experiments with *guano* are becoming very general, and there are now many instances where a *genuine article*, judiciously applied, has had a surprising effect on various crops. On the other hand, there have been many instances which have come to our knowledge in which it has done no good; but these have invariably occurred when the manure was applied in a dry state and a season of drought has followed, which was the case last spring, or when there was reason to suspect the guano was not genuine. As numerous instances are daily recorded of the effects of guano and other light manures, which are generally more or less interesting to all, we will mention the result of one or two experiments which came under our notice during the inspection of turnips last year:—

Swede turnips grown on a light alluvial soil at Lytham, by Thomas Clifton, Esq.:—

	Tons.	Cwt.
With farm-yard manure from 15 to 17 tons per statute acre	32	4
With guano, 4 cwt. per acre	29	0
With gallaxoide, 5 cwt. per acre	30	0

A crop of Swedish turnips, grown by Henry Hoghton, Esq., on Cranshaw-hall Farm, Bold, in a poor soil incumbent on clay, 25 tons 5 cwt. per acre were grown with 2½ cwt. of guano only. In this instance no comparative experiment was made with any other manure.

Whatever difference of opinion may exist among farmers as to the benefit to be derived from *guano*, there appears to be none as to that of another manure, which has been used for many years, and with the greatest success, in Cheshire—we allude to *bones*. When applied upon the clover roots and pasture lands of that county, the effect, especially on clayey soils, is truly surprising; and upon sandy and peaty soils turnips are grown with it at a less expense than with any other manure.

William Longton,
Henry White.

THE DINNER

Took place, as usual, in the large room of Lucas' Repository; the use of which was kindly granted. Mr. Lawton, of the Rainbow Hotel, was the caterer upon the occasion, and he provided an excellent and substantial repast. The attendance was numerous, there being about 400 gentlemen present. Dinner was on the table precisely at the hour appointed—five o'clock, and in a few minutes afterwards the chairman, the Right Hon. Lord Stanley, entered, accompanied by Earl Sefton, Lord Lilford, and others of the principal guests. The cloth was drawn about six o'clock.

After the usual loyal toasts, "The Army," "The Navy," &c., the chairman rose and said,—Gentlemen, in proposing the next toast,— "Prosperity to the Liverpool Agricultural Society," I am sure it is unnecessary for me to express to you the satisfaction I feel in seeing myself surrounded by so numerous and so respectable an assembly as I now see gathered together to do honour to an institution the anniversary of which we are now engaged in celebrating; and, also, I would fain hope, to bear, by their presence, their testimony of the sense they entertain of the merits of this and of similar institutions throughout the country, in promoting the important objects for which they were designed, those objects being of a two-fold character, not only (important as that object is) to increase the facilities and increase the cheapness of cultivating the soil of this country, and to render it more adequate to meet the daily increasing wants of a rapidly augmenting population, by an application of the sciences and the arts to the practical enlargement of the surface of the soil which we have at our command, but still more important in its bearings on our social relations, bringing together, as these meetings do, all classes of the community,—landlords, farmers of the higher and lower classes, and the labouring classes also,—combined, as I am happy to see them in this and similar localities, with the representatives of the great manufacturing and commercial interest of the community. Gentlemen, I am not about to enter into any discussion with you about the merits of the particular show which has been exhibited this day; partly for the very good reason, that, owing to other business, I have not had an opportunity of seeing the exhibition, and partly because, if I had seen it, you will hear an account of the merits of that show in the course of the evening, from gentlemen infinitely more competent than I to express an opinion, which will carry with it infinitely greater weight. Nor is it my intention to discuss the general advantages resulting from societies of this description. I think those advantages now so universally recognized, practically as well as in theory, that it would be an impertinent and needless waste of your time, were I to take it up with such a discussion. In every quarter of the kingdom, within the last two years, societies similar to this have sprung up, and, agriculture partaking in the general movement which has pervaded all the industrial pursuits of this country, the farmers have found out that it is necessary for them, with a view to their own interests, to take a very different course from that which they found chalked out for them by their fathers and grandfathers. They have found out that in these days no man can be allowed to stand still,—that improvements must go on; and we now see throughout the country the most gratifying proofs that improvement *is* going on as actively in the agricultural as in the manufacturing and commercial districts; and though I cannot take upon myself to say positively, that, because one circumstance takes place immediately after another, therefore, those two circumstances stand to each other in the relation of cause and effect, yet I cannot for a moment doubt the effect upon the agriculture of the country—I cannot doubt the effect produced by the communication mutually of information mutually possessed,—or the effect of the stimulus of competition, and of the constant communication of farmers with each other—I cannot doubt, I say, the effect on the agriculture of this country of institutions like this, and of a number of others now established in every part of the kingdom; and if I look into our own immediate neighbourhood, and consider the position of this county, deficient as we still are in our agriculture, and having still much to learn and much to improve; when I enter into comparison, when I look to farm stock, when I look to the mode of culture, and to the desire of improvement and amelioration now prevailing, and compare the state of things now with that which prevailed fourteen years ago, when I first had the honour to occupy the chair of this society, I hope I am not attributing too much to its operation, when I say, that to the frequent meetings of the society, and to the constant intercourse between different classes of men constituting it, much of that improvement is to be traced, which no man with an eye in his head can deny, and which must be most gratifying to men whose interests, like mine, are bound up with the agricultural interests of the country. I may say that within the last few years,—within a shorter time than I have named,—within the last four or five years, I have seen strides taken, which, though small when compared with those which might have been taken, are gigantic when compared with what has been done in former years. It is not more than four or five years ago, I think, at the meeting of the Royal Agricultural Society of England here, that I first named, as a novelty, the introduction of a single cargo of a new manure called guano, and recommended it to the consideration of the agriculturists of England. If I am not misinformed, from this single port of Liverpool there have since gone out, in a single year, no fewer than 150 vessels, chartered for the purpose of importing this (then unknown) manure for the improvement of our agricultural system. It is not, however, to manures like this alone that I look for much of the substantial and important improvements that have been effected. Everywhere I see old useless fences disappearing—fields enlarging—improved modes of agriculture adopted; everywhere I see going on with immense rapidity that which I must impress on all of you who are connected with the land, as the basis of all improvement—deep and thorough draining of the land, and not here alone, but throughout all England, it is most remarkable to every one; going along with railway speed from one part of the kingdom to another, the eye is everywhere struck with those promising red heaps which bespeak future exertions for the support of agriculture, and promise a well-deserved reward for future exertions. Gentlemen, I have heard some old farmers in this county—men who were really *old* farmers,—I have heard some of them mutter, shrug up their shoulders, and say, "What is the use of these improvements, and getting so much more from the land?" By the by, it is not only getting so much more, but it is getting different crops,—wheat instead of weeds. I have heard some of these old farmers say, "What good will these improvements do to us? We shall only have our rents increased the more the land is made productive!" I don't know,—I hope there is not any farmer present who holds that language; but if there be, with all due respect

I should say to him, that it seems to me the very height of absurdity, and, if I may be allowed to use a familiar saying, very much like cutting off one's own nose to spite one's face. To say " Why should I improve the land when the landlord will benefit by it?" appears to me very ungracious, and also a very bad argument. I am not here to deny that every improvement in the value of the land,—every thing that science can add to the productive powers of the land, must, in the long-run, be of advantage to those in whom the fee-simple of the land is vested; but the question is this,—at the same time that it is an advantage to the landlord, in whom the fee-simple of the land is vested, is it, or is it not also an advantage to the farmer, who makes his livelihood by it? Now, I ask no man to undertake any improvements—I ask no man to do so, if a sense of his own interest does not lead him to it—I ask no man, if it does not pay him individually to make improvements and improve the cultivation—but when farmers argue that, because at the expiration of their tenures their rent may be increased, therefore it is not worth their while to adopt the improvements, I must take the liberty of saying that they take a very short-sighted view of their own interests, and they must also think their landlords very great fools, and equally blind to their interests; for they must go on the principle that the landlords think their land need not be made more productive, and will be content to keep their rents low in order that slovenly tenants may go on in their old way; they must, in fact, I think, take as bad a view of their own interests as the farmers do of theirs. But again, I say, I expect no tenant to do that which shall not amply repay him his capital, interest, and profits, during the term of his occupation of the land. This brings me again to another question, and it is one which has been very much argued, namely, as to the degree in which it is desirable or important to hold land upon lease or without a lease. Now I speak, I know, in the presence of a noble friend of mine, and all who know him will say that there is nowhere a kinder or a better landlord, or a more cordial or warmer friend to his tenants and neighbours. I know no man who lives with his neighbours more as a neighbour ought to do, than my noble friend who sits on my left, the Earl of Sefton. I know, also, that it is not my noble friend's practice to let his farms on leases, and that the great majority of his tenants are tenants from year to year. Having entire confidence in the honour and integrity of their landlord, they do not believe that the fact of their not having a lease will operate disadvantageously on their interests. But I will say, as one connected with the land, that a landlord has no right to expect great and permanent improvements of the land in the hands of his tenant, unless that tenant be secured in the possession to himself of the outlay he has made, not by the personal character or personal honour of his landlord, but by a security with which no change of proprietorship can interfere; by a security granted on the terms of a lease for years. Now, gentlemen, observe I speak of a lease for years, emphatically I say I do not speak of *a lease for lives*, for in the agricultural districts—as far as my own experience goes, with some exceptions, no doubt—whenever I have gone through a property partially and badly cultivated, with the buildings dilapidated and going to decay, I have generally found that property held in a life lease. But I speak of a lease for a term of years, to the tenant who is determined to go hand in hand with his landlord, and spend his capital for the improvement of his farm; and I say, the greater the improvements effected, the greater ought to be the duration of the lease you give. I say that I consider it unjust to call upon the tenant to effect improvements and not to give him the security of possession for such a term as will repay him for the outlay he has made upon the land. But, gentlemen, I would go further than this, and I would say that there are some expenses of so permanent a character that the landlord ought to bear his share of them; but whilst I say this, I again repeat that it is no admissible argument against improvement, if the tenant repay himself for his improvements, to say that, at the expiration of his term, he shall leave the land in a better state than he found it; but whilst I say that this is an inadmissible position, and admit, nay, contend, that in proportion to the amount of improvement expected from the tenant ought to be the duration of the lease that is to repay him, I will say that there are some expenses, more especially with regard to the sort of land of which a great part of this county consists, which it would be idle to expect the tenant to undertake,—expenses which, as they add to the permanent value of the land, ought to be undertaken by the landlord himself,—charging such an amount of interest as will pay him annually for the outlay he has made, and at the same time allowing a reasonable profit to his tenant. Gentlemen, I am not now speaking except of that with which I am myself practically acquainted. I allude again to that which is the basis of all improvement, especially in this county, deep and thorough draining of the soil, and I repeat, what I have said on a former occasion in this room, my conviction that there is no investment in the world in which the landlord can so safely, so usefully, and so beneficially invest his capital as in the improvement of his own farm, by means of scientific draining, on the security of the land itself. I think I may give you a tolerably practical proof of the sincerity of my conviction on this point—and I say it not for the purpose of boasting of what has been done, but with a view to encourage others to follow the example—when I say, that on my father's property in this immediate neighbourhood, there have been laid down, at his expense, charging 5 per cent interest to the tenants, which, I believe, they most gladly and willingly pay—indeed in many instances it has been done at their own request—in the course of last year alone, I say, there have been laid down, of deep thorough draining, somewhere about 300 miles of drains, at an expense of between £5000 and £6000, and, I think, employing somewhere about a million and a half of draining tiles. Now, be the term of tenant longer or shorter, the immediate benefit of that process accrues to him, and instead of calling upon him to expend his capital for this purpose, the capital is provided by the landlord, and the annual interest only is paid by the tenant. Both parties are thus benefited. The landlord receives an ample return for his own outlay; and there are several present on whose declaration I would venture to abide, or, indeed, on that of any of the tenants of that property, whether the additional rent upon their farms which they have incurred by having their fields drained, has not been paid over and over again by the annual returns arising from the improvement. Gentlemen, perhaps it may be thought that I have trespassed on your indulgence on a subject peculiar, and I may almost say personal to myself, at greater length and detail than I am justified in doing on the present occasion. But I do think that these are occasions when we should fairly speak out our minds to each other. We meet here, landlords and tenants, and it is right that we should frankly express our opinions. I do not hesitate to express mine on the mutual duties of landlords and tenants, and I have mentioned one improvement in which both may most effectually combine, and in the advantages of which both are at least equally interested. Gentlemen, I believe that on the whole I am in a position to congratulate you on the present state of this society. Gentlemen, that the period of its depression has already passed, I think undoubted. It has been subject to some adversity, and has experienced some losses, and two or three years ago it became involved in debt, from which some exertion was necessary to relieve it, but I have the satisfaction of saying that the debt has now been cleared off. That object was partly effected by the reduction of some of the premiums. If the diminution have curtailed the benefits of the society, and if we move in a more contracted sphere, still we have the satisfaction of knowing that we pay our way, and can diffuse, to a considerable extent, the advantages of which such an institution is capable. I should say that, anxious as I am for the increased and increasing prosperity of this society, I do feel forcibly that it might be of advantage if the sphere of its operations were more extended; and I venture to throw out the suggestion, whether great advantage might not be derived from its amalgamation with another and a similar society in the south-eastern part of this county. If the members of that society, and farmers from some parts of Cheshire came to Liverpool, it would increase the amount of competition, and the stimulus which would be brought to bear on farmers, and the combination of the two societies, would, in my opinion, greatly increase the advantages held out by each. I do not know whether that suggestion has yet been made to any of the members of the Manchester Agricultural Society, but I believe if it were effected, it would tend to the mutual advantage of both societies, and greatly increase the prosperity of both. With these observations, and thanking you for the patience with which you have listened to the remarks of one very little competent to address you, I again most cordially call upon you to drink "Prosperity and success to the Liverpool Agricultural Society."

The Earl of Sefton on rising was received with the loudest marks of approbation. He said he had the leave of the noble chairman to propose to them a toast. It was a task he should find difficulty in performing. He did not know exactly how to give that toast, but he thought he could put it to them, as farmers, in a homely way, that they could all understand. There were no persons who knew the value more than farmers of a good neighbour. They might all, perhaps, wish their farms were a little larger,—that their neighbour's farm was a little further off, but they would all be glad to know that the man who lived in the next lane end was a hearty good fellow. They would not like to have a quarrelsome litigious fellow with whom they could never agree. He (the Earl of Sefton) had a neighbour exactly the contrary to this—one with whom he was always on the terms of the greatest friendship—one from whom he received acts of the greatest kindness, and one towards whom he felt the greatest affection and respect—he meant the Earl of Derby. The noble Earl concluded by proposing "The Health of the Earl of Derby."

Lord Stanley returned thanks, and proposed "The Healths of the Vice-presidents, the Earl of Sefton, Mr. Watt, and Mr. Robertson Gladstone, with an expression of the cordial satisfaction of the society at their presence on the present occasion."

The Earl of Sefton and Robertson Gladstone, Esq., responded to the toast.

The chairman said he was sure the old members of this society would recollect that, in the early years of the institution, the wall immediately behind him was decorated with a goodly array of salvers, saucepans, tea-kettles, tea-spoons, coffee-pots, cream-jugs, and silver spoons, which formed a very imposing array, but it so happened that, in the course of time, some of those who were the most successful competitors—or rather, he should say, the wives of the successful competitors—declared they had so many cream-jugs and tea-spoons that they did not know what to do with them, and they suggested to their other—he was going to say their better halves—that it would be better to pay the premiums in money, and then they could get the tea-spoons if they desired. That being so, it had been decided that the whole of the premiums should be paid in money, and this plan had been acted upon for the last few years. His lordship then proceeded to deliver the

PREMIUMS AWARDED.

CLASS 1.—BEST CULTIVATED FARMS.

4.—To Mr. Charles Smith, of Ashton-upon-Mersey (solely dependent upon farming), for the best cultivated farm of 158 acres, £10.

6.—To Mr. James Langshaw, of Speke (solely dependent upon farming), for the best cultivated farm of 98 acres, £5.

12.—To Michael Hughes, Esq., of Sherdley House, near St. Helen's, as owner and occupier of a farm of 155 acres, for laying 9417 yards of drains, chiefly with cinders, for most effectually draining 10 acres thereof, the medal.

14.—To Mr. John Taylor, of Newton by Daresbury, as tenant and occupier of a farm of 162 acres, for laying 9640 yards of drains, with 23,150 tiles, 15 inches long, for most effectually draining 16 acres thereof, £8.

15.—To Mr. Edward James Pemberton, of Sankey, as tenant and occupier of a farm of 125 acres, for laying 17,182 yards of drains, chiefly with cinders, for most effectually draining 17 acres thereof, £6.

19.—To Mr. Robert Neilson, of Halewood, as tenant and occupier of a farm of 175 acres, for subsoiling in a most efficient manner 99 acres thereof, the medal.

22.—To Mr. William Atherton, jun., of Speke (solely dependent upon farming), as tenant and occupier of a farm of 102 acres, for laying down well to permanent grass 14 acres thereof to meadow or pasture, £4.

24.—To Mr. Robert Birch, of Netherton, as tenant and occupier of a farm of 210 acres, for having judiciously covered with marl 27½ acres thereof with 114 cubic yards per acre, £3.

25.—To Mr. John Davies, of Childwall, as tenant and occupier of a farm of 126 acres, for having judiciously covered with marl 34 acres thereof with 64 cubic yards per acre, £2.

27.—To Mr. James Birch, of Sefton, as tenant and occupier, for making the best reservoir on his premises for the reception of dung-water, £3.

30.—To Mr. Allen Beckett, of Sutton Hall, near Preston Brook, as tenant and occupier, for judiciously cutting, laying, and plashing 2276 yards of fencing, £3.

CLASS 2.—CROPS GROWN IN 1843.

1.—To Thomas Clifton, Esq., of Lytham Hall, as owner and occupier, for the best crop of Swedish turnips, of 25 acres, being 32 tons 4 cwt. to the acre, the medal.

2.—To Mr. John Dawson, of Gronant, as tenant and occupier, for the best crop of Swedish turnips, of 16 acres, being 30 tons 2 cwt. to the acre £5.

3.—To Mr. Thomas Wild, of Weaverham Wood, Cheshire, as tenant and occupier, for the best crop of Swedish turnips, of 5 acres, being 26 tons 18 cwt. to the acre, £4.

4.—To Mr. John Heyes, of Knowsley, as tenant and occupier, for the best crop of Swedish turnips, of 3 acres, being 27 tons 8 cwt. to the acre, the medal.

5.—To Mr. Richard Dobell, of Leftwich, as tenant and occupier, for the best crop of Swedish turnips, of 2¾ acres, being 27 tons 15 cwt. to the acre, £2.

6.—To Mr. John Dawson, of Gronant, as tenant and occupier, for the best crop of mangel wurzel, of 3 acres, being 31 tons 17 cwt. to the acre, £3.

CLASS 3.—LIVE STOCK.

HORNED CATTLE.

1.—To Mr. C. H. Sidebotham, Ashley Cottage, near Altringham, for the best bull of any breed, under four years old, belonging to any person within the limits of the society, £15.

2.—To Sir Thomas de Trafford, Bart., Trafford Park, for ditto, above one year and under two years old, the medal.

3.—To Mr. William Palin, Stapleford Hall, for the best bull of any breed, above two and under four years old, belonging to any person solely dependent upon farming, £10.

4.—To Mr. William Atherton, Upholland, for the best bull of any breed, above one year and under two years old, belonging to any person solely dependent upon farming, £5.

5.—To Sir Thomas de Trafford, Bart., Trafford Park, for the best cow or heifer of any breed, in milk or in calf, the medal.

6.—To Messrs. Robert and William Chadwick, Liverpool, for the second best ditto ditto, £3.

7.—To Viscount Hill, Hawkstone, for the best two-year old heifer of any breed, the medal.

8.—To Viscount Hill, Hawkstone, for the best yearling heifer of any breed, the medal.

9.—To Mr. Richard Dobell, Leftwich, for the best cow of any breed, in milk or in calf, belonging to any person solely dependent upon farming, £5.

10.—To Mr. William Longton, Rainhill, for the second best ditto ditto, £3.

11.—To Mr. Robert Parry, Borras Hall, near Wrexham, for the best two-year old heifer of any breed, bred by and belonging to any person within the limits of the society solely dependent upon farming, £3.

12.—To Mr. William Atherton, Upholland, for the second best ditto ditto, £2.

13.—To Mr. William Palin, Stapleford Hall, for the best one-year old heifer of any breed, bred and belonging to any person within the limits of the society solely dependent upon farming, £3.

14.—To Mr. Thomas Chapman, Hutton, near Preston, for the second best ditto ditto, £2.

16.—To Gilbert Greenall, Esq., Walton Hall, Cheshire, for the cow or heifer of any breed, showing the most symmetry, fat, and weight, the medal.

17.—To the Earl of Derby, Knowsley Hall, for the second best ditto ditto, £2.

HORSES.

18.—To Mr. John Martland, Rufford, for the best stallion for the general purposes of agriculture, £8.

19.—To Mr. John Simpson, Liverpool, for the second best stallion for ditto, £4.

20.—To Mr. John Simpson, Liverpool, for the best three-year old colt for ditto, £5.

21.—To Mr. William Hunter, Hutton Grange, near Preston, for the best two-year old colt for ditto, £4.

22.—To Mr. William Atherton, Upholland, for the best yearling colt, gelding, or filly, for ditto, £3.

23.—To Mr. Peter Almond, Lunt, for the best two-year old gelding or filly for ditto, £4.

24.—To Mr. John Birch, Orrell, for the best three-year old gelding or filly for ditto, £5.

25.—To Mr. John Woodward, Daresbury, for the best brood mare for ditto, £5.

26.—To the Executors of Elizabeth Molyneux, Croxteth, for the second best brood mare for ditto, £3.

27.—To Thomas Weld Blundell, Esq., Ince Blundell Hall (not being solely dependent upon farming), for the best pair of horses for the general purposes of agriculture, the medal.

28.—To Mrs. Margaret Howard, Knowsley (being solely dependent upon farming), for the best pair of horses for ditto, £5.

29.—To Mr. William Brownbill, Kirkby (being solely dependent upon farming), for the second best pair of horses for ditto, £3.

SHEEP.

30.—To R. C. Lowndes, Esq., Low-hill, for the best pen of three yearling long-wool lambs, £3.

31.—To R. C. Lowndes, Esq., for the best long-wool ram, under three years old, £2.

32.—To R. C. Lowndes, Esq., for the best pen of five long-wool lambs, £2 10s.

33.—To Viscount Hill, Hawkstone, for the best pen of three yearling short-wool ewes, the medal.

34.—To Viscount Hill, Hawkstone, for the best short-wool ram, the medal.

35.—To Mr. John Williams, Celyn, near Northop, for the best pen of five short-wool lambs, £2 10s.

37.—To R. W. Barton, Esq., Caldy, near Birkenhead, for the best pen of five fat ewes, £2.

PIGS.

38.—To Mr. William Cawsoll, Salford, for the best boar of the large breed, not more than two years old, £4.

39.—To Mr. George Mills, Lytham, for the second best boar ditto, £1.

40.—To Gilbert Greenall, Esq., Walton Hall, Cheshire, for the best boar of the small breed, not more than two years old, the medal.

41.—To Harold Littledale, Esq., Liscard, for the second best boar ditto, £1.

42.—To Mr. James Cooper, Windle, for the best breeding sow of the large breed, not more than three years old, £2 10s.

43.—To Mrs. Alice Holden, Liverpool, for the second best sow ditto, £1.

44.—To Gilbert Greenall, Esq., Walton Hall, Cheshire, for the best breeding sow of the small breed, not more than three years old, the medal.

45.—To Mr. Thomas Welsh, Toxteth Park, for the second best sow ditto, £1.

46.—To Mr. James Foster, Liverpool, for the second best fat pig ditto, £2.

47.—To Mr. Philip Jopson, Everton, for the best fat pig of any breed, not more than eighteen months old, £1 10s.

EXTRA STOCK.

48.—To the landlord who shall keep the best stallion of any breed, to serve the mares of his tenantry gratis, the medal to the Earl of Derby, Knowsley Hall.

49.—To the landlord who shall keep the best bull of any breed, to serve the cows of his tenantry gratis, the medal to Charles Scarisbrick, Esq., Scarisbrick Hall.

51.—To the landlord who shall keep the best bull of any breed, to serve the cows in a public ley for cattle, and which has served from the 12th May preceding the show, the medal to Henry Hoghton, Esq., Bold Hall.

52.—To Mr. John Simpson, Liverpool, for the best pair of draught horses employed in Liverpool, £4.

53.—To Messrs. Jump and Sons, Liverpool, for the second best ditto, £2.

CLASS 4.—REWARDS.

1.—To Jonathan Huyton, farmer's man-servant to Mr. James Lyon, of Melling-cum-Cunscough, for 25 years' servitude and good conduct during that period, £4.

3.—To William Travers, farming labourer to Michael Hughes, Esq., and his late father, of Sherdley House, for 46 years' servitude and good conduct during that period, £4.

4.—To John Hitchmough, farming labourer to J. Ireland Blackburne, Esq., M.P., and his late father, of Hale Hall, for 39 years' servitude and good conduct during that period, £2.

8.—To Thomas Basnett, labourer to Mr. Allen Beckett, of Sutton Hall, Cheshire, for having cut, laid, and piashed 2276 yards of quickset fencing, £3. (Given by the Right Honourable Lord Lilford.)

SWEEPSTAKES.

1.—Short-horned bull, £1 1s. each; Mr. C. H. Sidebotham, £4 4s.
2.—Short-horned bull, two years old, 10s. 6d. each; Mrs. Elizabeth Scotson, 10s. 6d.
3.—Short-horned bull, two years old, 10s. 6d. each; Sir Thomas de Trafford, Bart., £1 1s.
6.—Cow of any breed, 10s. 6d. each; Sir Thomas de Trafford, Bart., 10s. 6d.
7.—Fat heifer of any breed, £1 each; Gilbert Greenall, Esq., £1.
8.—Short-horned heifer, one year old, 10s. 6d. each; Viscount Hill, 10s. 6d.
9.—Short-horned heifer, one year old, 10s. 6d. each; Viscount Hill, £2 2s.
10.—Bull calf, under one year old, 10s. 6d. each; Viscount Hill, £1 1s.
11.—Cow calf, under one year old, 10s. 6d. each; R. C. Lowndes, Esq., 10s. 6d.
13.—Stallion for agricultural purposes, £1 each; Mr. John Martland, £2.
18.—Brood mare for agricultural purposes, 10s. 6d. each; Mr. John Woodward, 1*l.* 1s.
19.—Ram, 10s. each; Viscount Hill, 10s.
20.—Ram, one shear, 7s. each; Viscount Hill, 7s.
21.—Boar, 10s. 6d. each; Gilbert Greenall, Esq., 2*l.* 2.
22.—Sow, 10s. 6d. each; Gilbert Greenall, Esq., 1*l.* 1s.
24.—Swedish turnips, 5s.; Mr. James Little, 15s.
25.—Scotch cabbage, 5s.: Mr. William Taylor, 5s.
26.—Sample of white wheat, 10s. 6d. each; Mr. Thomas Harrison, 1*l.* 11s. 6d.
27.—Mangel wurzel, 5s.; Mr. Thomas Ainscough, 1*l.*

IMPLEMENTS.

To Mrs. Cartmell, of London Road, Liverpool, for exhibiting a good assortment of agricultural implements, the medal.

To Messrs. Ireland and Longton, of Manchester, for exhibiting two farmers' fire engines, the medal.

To Messrs. J. and C. Whalley, of Liverpool, for exhibiting a veterinary stomach pump, the medal.

To Messrs. J. and C. Whalley, for exhibiting a general collection of agricultural implements, the medal.

To Mrs. Cartmell, of London Road, Liverpool, for exhibiting an improved steelyard and patent machine for weighing grain, the medal.

To Mr. James Richmond, of Salford, for exhibiting a number of agricultural implements, of superior workmanship, the medal.

To Mr. David Harkes, of More, near Knutsford, for exhibiting a good general collection of implements, the medal.

To Mr. Abraham Vickers, of Manchester, for exhibiting a churn, upon a new principle, highly commended by the judges, the medal.

To the Earl of Sefton, for exhibiting a liquid manure cart, the medal.

To Mr. James Cuthbert, of Liverpool, for exhibiting two ploughs and a Scotch cart, the medal.

To Mr. Robert Neilson, for exhibiting a self-tipping cart and other excellent implements used on his farm at Halewood, the medal.

JUDGES OF STOCK, &c.

FOR CATTLE.—Mr. Torr, of Riby, near Brigg, and Mr. Hall, of Wiseton, near Bawtry.

FOR HORSES.—Mr. Joseph Woolf, of Haslington Hall, near Sandbach, and Mr. William Denham, of Derby.

FOR SHEEP AND PIGS.—Mr. Samuel Wiley, Bransby, near York, and Mr. William Pybus, Whiston.

FOR IMPLEMENTS, SEEDS, AND ROOTS.—Mr. Richard Clyburn, Uley Iron Works, Gloucestershire; Dr. Sillar, of Rainford; and Mr. John M'Farlane, of Speke.

In the course of the delivery of the premiums, Mr. Edward Pemberton, of the Wash, Sankey, entered into an explanation of his system of cinder-draining, which he said he could accomplish at 6d. a rood.

When Mr. Lowndes was called up to receive his three prizes for sheep, the chairman said, "You are a dreadful monopolist, Mr. Lowndes, but they say it is quite consistent with free trade."

The chairman, in commencing the distribution of the prizes to farm labourers, said he now came to a class of prizes which he looked upon with the greatest pleasure—he meant the prizes for deserving farm labourers and others engaged upon farms. He could not pass by that opportunity without expressing the deep regret with which he had seen lately, in one of the newspapers of this county having an extensive circulation, an attempt to undervalue these prizes, as being a payment to the servants for their long services. He was sure the labouring community would feel that they were put forward in no such degrading manner—that they were not payment—that they were not by the way of remuneration, but by the way of marking, on the part of a class of society who had the best means of judging of their merits, the sense which they entertained of the honour which those persons in humble circumstances had done to themselves and to society by a long course of faithful and honest conduct: that they were not a degrading, as they would be a most insufficient, reward—but as a mark of respect of which any man of any class of society might be proud. He held in his hand that which was to accompany the premium to John Huyton for 25 years of faithful servitude. He need hardly say that the £4 would be in itself as unworthy a remuneration as the piece of paper he held in his hand, but he believed this honest man and his family would keep by them this proof of his long and faithful services, appreciated by those with whom he had lived, and it was with these feelings that he (the chairman) gave this of which he (the recipient) might well be proud.

In delivering the prize for planting the greatest length of hedge-rows, Lord Stanley said he had not hitherto interrupted the course of proceedings by asking the company to drink the healths of the successful competitors, although there were many among them to whom he should have been glad to have paid the compliment. He was not now, therefore, going to propose the health of any competitor; but, as this was a premium given by the Right Honourable Lord Lilford, whom he had the pleasure of seeing present, he thought the company would be grateful (as he was sure he should be) for a temporary pause in a somewhat tedious occupation of reading a long list, by proposing "The Health of his noble friend, Lord Lilford, a warm patron of agriculture, and coupling with his name the agriculturists of Northamptonshire."

Lord Lilford on rising was received with three times three, which having subsided, he assured the company it was with feelings of the deepest gratitude he had to tender his thanks for the manner in which his health had been received. He knew not, indeed, whether to his noble friend he ought not to return thanks for interrupting a course of proceeding, which, to his mind, was one of the most interesting in which human beings could be engaged. When he said this, it was for the sake of expressing most humbly, and as he feared most incapably, the feelings of gratification with which, as upon every occasion, he had witnessed the giving of prizes to the agricultural labourers of this country—a ceremony which he believed in his heart was productive, not only of temporary gratification to themselves, but also of permanent benefit to the society in which they lived and moved. He had witnessed scenes of this sort in the county in which his residence was placed. It was only last week he had the satisfaction of meeting a body of agriculturists in Northamptonshire, not in a splendid hall like that in which they were assembled in Liverpool, but in a humble tent, almost saturated with three hours' rain; and he could assure the company that the coming forward of agricultural labourers to receive their prizes was hailed by the whole assembly, and was most gratifying to every person who had the pleasure of witnessing it. For himself he again tendered his most grateful thanks for the honour paid to the mention of his health. From circumstances over which he had no control, his residence in this neighbourhood had been of late much interrupted; but there were some persons in the room with whom he had the honour of standing in the relation of landlord and tenants. He was quite sure that meetings like this tended to draw closely, not only the bonds of amity between landlord and tenant—a relationship which he thought was one of the nearest in which they could be engaged—but he hoped their ultimate effect would be to draw closer those bonds of mutual amity between man and man, which were the basis of all society. In the name of the agriculturists of Northamptonshire he begged to return his most heartfelt thanks for the honour conferred upon him.

Lord Stanley having gone through the list of premiums, concluded by naming the judges of the several branches of the exhibition, and proposing their healths amidst loud applause.

Mr. W. Torr, of Riley, Lincolnshire, one of the judges, responded. After a few introductory observations, he said he had to express to them the opinion of a colleague, who on a previous occasion acted as judge—that a great improvement had taken place in the exhibition of stock that day. It was the first time that he (Mr. Torr) had had the honour to act as a judge, and he must say there were some splendid specimens of short-horns exhibited; but if his friend's observations went to one part of the show, he would say it must have been very bad before that improvement had taken place. The class to which he particularly alluded was that of the bulls kept by landlords to improve their tenants' stock. He had no doubt the intention was to do good, but, if he might judge by the specimens shown, they were not the means to arrive at the end. After speaking of the great good resulting from landlords keeping good bulls, and the contrary, he said he was quite sure the cheers given when the landlords' names were mentioned for prizes, were solely for their good intentions, and not for the bulls themselves. There was another part of the stock upon which he begged to offer an opinion without reference to the show that day. They all knew that this was a mechanical county, and he did hope, that a part of the mechanical talent for which this part of Lancashire was famed might be more applied to agricultural implements. When they came to Liverpool and Manchester they did expect to see a portion of that talent employed in the improvement of their agricultural implements, and he suggested, in order to secure that, that some more liberal premiums should be offered by the society. He expressed an opinion that agricultural societies tended not only to the advantage of agriculture, but to the general welfare of the country. A great fat bull or a great fat tup did no very great deal of good, but a hundred people could not meet to see them without imparting to each other some information, and by these means good was effected. Some objected to these societies, inasmuch as they gave to landlords too great an amount of information, and some tenants are reported to have said they did no good because the landlords knew all that was made: but the more a landlord knew the better. No landlords were so good to deal with as those who were perfect men of business. If they knew the produce they also knew the expenses. That they were all embarked in the same enterprise there could be no doubt. It was to the interest of the landlord, the tenant, and the labourer, to advance agriculture. Now that a large and increasing population was rising around them, it behoved them to produce the greatest amount of produce at the cheapest rate. The speaker then adverted to the old grass lands of England, and urged their immediate taking up. As a tenant farmer, he had given considerable attention to the subject, and he was sure it was required. Lying in their present state they did good to no one; but, if they were taken up, they would soon give additional labour, and would be of great benefit. He wished to make one observation with regard to leases. There was no one fonder of the principle of a good lease, under a good landlord, than he was; but it so happened, that in many counties they could not get one. In some counties, sometimes there was a great want of confidence, and in some others there existed great confidence between landlord and tenant; but this state of things prevented improvement. What he wanted was, that it should go forth as his opinion that there should be an increase in the tenant right—that the tenant, on quitting his farm, should get a heavier return for the improvements made. Some landlords objected to giving leases, and they had good reason to do so, but he thought much of the evil could be removed by giving greater tenant right. If the incoming tenant got the benefit of the limes, manure, &c., of the outgoing tenant, he could not grumble when he was to receive the benefit of it to pay for it, and this could only be done by increasing the tenant right. After thanking the company for the patience with which they had listened to him, he concluded by wishing every success to the Liverpool Agricultural Society.

Lord Stanley proposed "The Healths of the Mayor and Corporation of Liverpool."

The Mayor returned thanks, and proposed "The Health of the Noble Chairman, as a distinguished ornament of the peerage."

Lord Stanley, on rising to reply, was saluted with warm bursts of cheers, followed several times by calls for "one cheer more." He said—Gentlemen, I need not say to you that it is always deeply gratifying to any man to find that his services, however humble, are appreciated by any body of his country; but the gratification must be enhanced when he is himself conscious that those services are, in themselves, of little worth, and that the compliment and the appreciation of them proceed from those with whom he is bound by the nearest and the closest ties, not from those with whom he is bound by the association of a common country only, but by those who have lived in his immediate neighbourhood, among whom he was born, who have had an opportunity of watching the course of his life, and who ought to be the best judges of his conduct and of his motives. I need not say I am deeply grateful for the enthusiastic compliments which I have received this evening from those among whom I was born and have been brought up. Gentlemen, circumstances and the ties of public life have prevented me very much, of late years, from spending as much time as I could desire among many of my friends here; but believe me, that while I am engaged in the public service of the country, my feelings and my affections are mainly centred in this immediate neighbourhood; and however my time may be engaged, and in whatever course my services may be called for, I shall never cease to remember that I belong to this county and to this neighbourhood, to seize, with satisfaction, every opportunity which moments of relaxation may afford me, to keep up a more intimate acquaintance with those among whom I desire to live much more than I can do. And though I am engaged in public life, one of the greatest consolations I derive, while I am deprived of the social intercourse which I would desire to cultivate, is the conscientious and honest belief, that though deprived of the society of many of my friends, I yet am labouring in their behalf, by devoting the best energies of my mind in that position of life in which Providence has been pleased to place me, to the discharge of the duties which belong to my station. I can say no more than that I cordially, gratefully, and deeply thank you; that I feel your kindness, and ever shall feel it; and in all the difficulties to which I may be exposed, and in all the labours I may have to encounter, the greatest satisfaction that I can desire is, the belief that I possess the confidence and the good opinion of those to whom I am best known—the inhabitants of my native county. The noble lord, after a few seconds' delay, proposed, in some very complimentary observations, "The Healths of the successful competitors, connecting with the toast Mr. Robert Neilson, a gentleman who had recently become a tenant to his father, and who was one of the most enterprising, active, and intelligent agriculturists of the county."

Mr. Neilson, in his reply, gave a particular account of his subsoil ploughing, for which he had that day obtained a prize. He had two descriptions of ploughs—one which he used in the furrows of turnip drills, and which, by its action, raised up the sides of the drills, and so loosened them as to admit the atmospheric air; the other plough was used in the track of a common plough, when preparing the land for wheat, and could be worked by two horses abreast. In constructing one of these ploughs, he was much indebted for some useful hints to his friend, Mr. Hendrie, of Knowsley. Mr. N. then made a statement as to the extent of land which had been brought into cultivation on his farm by the eradication of old hedges, filling up and draining of large ditches, and enlarging the fields, by which upwards of 12 acres had been gained on a farm of 175 acres. He then spoke of the increased production to be effected by the ploughing up of pasture lands, the necessity for improved farm buildings and yards, and the construction of liquid manure tanks. He spoke practically on this subject, having had entire new erections made upon his own farm by his landlord (Lord Derby), by which he had found considerable saving in labour; and although the terms on which the improvements were made were not at present determined, he did not hesitate to say, that he would rather give his landlord, not 5 per cent, but even 10 or 15 per cent, rather than it should not have been effected. The report has already extended to such a length, that we cannot give the whole of Mr. Neilson's explanation; but no doubt he would be glad to show any gentleman his improvements who will visit his farm.

The chairman then begged to propose "The Health of the Committee of Management and their efficient and able secretary, Mr. Ledger."

Mr. Ledger was sorry the duty of replying to that toast had fallen to his lot; yet, on the part of the committee, he begged to return their best thanks. He had been connected with the committee of the society almost from the time of its commencement, and for the last eight years he had had the honour of being its secretary. From his peculiar occupation, he had had the means of paying peculiar attention to the farming of this district for the last dozen years, and he could with confidence say that during that time there had been more progress made in agriculture than in five times the number of years preceding; and he also might say, with equal truth, that for the stimulus to that improvement, they were much indebted to the establishment of this society. He concluded by saying it was necessary for him to relinquish the duties of the office he had filled for so long a period; at the same time it would give him the greatest satisfaction to do all he could to forward the interests of the society.

The chairman then gave "The Health of Messrs. Lucas, and many thanks to them for their kindness in allowing the society the use of that room."

Mr. Lucas, jun., returned thanks. He said that though, strictly speaking, they (the Messrs. Lucas) were not agriculturists, yet they fully appreciated the importance of agriculture, and were well aware how necessary it was for the welfare, the prosperity, and the happiness of society. He hoped they would receive the use of the room as an evidence of their disposition to forward the usefulness of the society to the best of their ability.

The chairman then proposed, in a bumper, "The Lancashire Witches."

This toast was heartily responded to, and the company broke up at a quarter after nine o'clock.—*Liverpool Mercury.*

CAUTION TO PURCHASERS OF GUANO.

Our pages have at various times contained directions to the purchasers of guano, showing them the impossibility of judging of the qualities of the article either by its colour or smell, and advising an analysis before they bought. We again urge their sole reliance on analysis where they are not assured of the respectability of the dealers, for additional reasons: but, indeed, it would in all cases be better to rely on analysis, because of the great difference in guano, even when brought from the same heap. This trade has hitherto been considered very profitable, and unprincipled parties have not been backward to turn this to their advantage. Not being able to command a supply of the genuine article sufficiently large for the market, they do not scruple to manufacture a cheap commodity which they sell at a dear rate, unfit in almost every respect for the purposes of agriculture. We have the authority of the *Liverpool Mail* for stating that four vessels, ballasted with gypsum, have sailed to the guano coast; and also that umber, cheaply obtained from Anglesea, is used to adulterate guano, in the proportion of 15 cwt. of the former to 5 cwt. of guano! By means of umber and gypsum—one brown, the other white—a composition, similar in colour to genuine guano can be made, of the various tints which that article bears, according to its age, condition, the depth at which it was obtained, or the locality whence it was brought. This, of course, deceives the eye; the deceit of the nose has only then to be accomplished, which can also be done at a light expense, and the shameful mixture is submitted to sale.

It is time such roguish dealing should be stopped. This, however, cannot be easily done unless the purchasers will join in putting it down; for we may rest assured, that so long as people will buy without care, so long will they be duped, (which, after so much caution, they deserve to be); and, so long as the nefarious traders find dupes, will they unblushingly drive on their profitable traffic. We therefore again urge all purchasers of guano to be cautious, and never purchase to any extent without a sample and an analysis. Roguery will thus receive a proper check, and they will be much more likely to obtain a good article by those means than by any other.

HAIGH AGRICULTURAL SOCIETY.

The first general celebration of the establishment of this farming society was held on Thursday, the 24th of October, and if we may be allowed to judge of its future welfare and prosperity from the liberal manner in which it is at present supported, and the great cordiality and zeal which prevail among the individuals at the head of its management, we may safely be permitted to say that in the course of a few years it will be well enabled to take its stand with those other farming societies in the county whose existence may be dated at a much earlier period. The society is at present strictly private, that is to say, its premiums are confined exclusively to the tenants of its noble patron, the Earl of Balcarres, on his estates in Haigh, Blackrod, Aspull, and Wigan; and hitherto no arrangements have been made for forming sweepstakes, to be open to all competitors. This, however, will no doubt be done hereafter, or otherwise the tenantry of the district will be deprived of one of the greatest advantages conferred by societies of this description—that of seeing and competing against stock produced at a distance, the quality of which it may be most desirable to see introduced within the locality of the society's operations. The Hon. Colin Lindsay, son of the noble patron, is the president of the society, and to his high honour, he seems to devote every energy in promoting its welfare; indeed, if his zeal may have been equalled by other noblemen and gentlemen, filling a similar situation, it can scarcely have been surpassed; for in the discharge of any duty connected with it, his whole soul may be seen in his desire to perform it successfully. This most admirable indication of his zeal and sincerity was forcibly evinced in the spirited and excellent style in which he presided over the dinner proceedings on Thursday, immediately after the show had been concluded. The show was appointed to take place at the Balcarres' Arms Inn, in Haigh, three miles from Wigan, and about one mile from Haigh Hall, the residence of his lordship. A spacious inclosure had been formed in a field in the rear of the inn, with all accommodations for the stock, and the spectators who desired to inspect them. Two large tents had also been erected, one for the exhibition of agricultural produce (of which there were some specimens in Swedes, mangel wurzel, cabbages, &c., &c., exceedingly creditable to the producers), the other as a resort for refreshments. As respects the quantity and quality of the stock exhibited, it was not so numerous as we have witnessed at some other recent shows, neither was it entitled to be considered of so improved a description; but all allowances must be made: men were once puny babes; the stately oak was once an insignificant acorn; and in like manner the Haigh Society must needs have an infancy, and must, therefore, present the appearances belonging to that tender, unripened period. But the "wee thing" at Haigh is well formed—sound in all its parts—is ensured of an abundant supply of funds requisite to promote its growth—has very active and watchful nurses, in its excellent vice-presidents, Mr. Peace and Mr. Glover, secretary, Mr. Taylor, and treasurer, Mr. Ormandy. What, then, we would ask, can hinder its rapid advancement to a state of strong and healthy maturity?

Among the visitors at the show-ground, we noticed the Earl and Countess of Balcarres, accompanied by their sons, Lord Lindsay, the Hon. Capt. Lindsay, the Hon. Charles Hugh Lindsay, and the Hon. Colin Lindsay. The noble earl and the countess appeared to take a very lively interest in all that was to be seen, and were most affable and condescending to the tenantry and all other persons. The following gentlemen were also at the meeting:—P. Ainsworth, Esq., M.P., W. F. Hulton, Esq., E. Silvester, Esq., John Woodcock, Esq., E. Woodcock, Esq., John Lord, Esq., F. Gerrard, Esq., H. Gaskell, Esq., Lieut. Peel, Rev. W. H. Brandreth, Rev. John Lingham, Rev. J. T. Brown, J. Lord, jun., Esq., G. Gunning, Esq., G. Daglish, Esq., Mr. Peace, Mr. Ormandy, Mr. Glover, Mr. Almond, &c. The judges of stock were Mr. Cannell and Mr. Martin; the inspectors of farms, Mr. Talbot and Mr. Newton, the whole of whose decisions gave general satisfaction. The dinner was appointed to take place at half-past four, in the large room belonging to the inn. It will not be necessary to name the principal guests, as with the exception of the Earl of Balcarres and Lord Lindsay, they were those just enumerated.

After the usual loyal toasts, the chairman proposed "The Bishop and Clergy of the Diocese," which was responded to by the Rev. J. T. Brown.

The chairman would desire next to propose "The Army and Navy," those two great services which are the glory of England, and the terror of every foreign land.

The Hon. Captain Lindsay said he had to return his sincere thanks for the honour paid to the army and navy, by the toast, and particularly for the enthusiastic manner in which it had been drunk. It was not for him to expatiate on the merits of the army, for those merits, they were well aware, had been fully established, and were already emblazoned in the annals of fame. The army and navy were not the less deserving of the enjoyment of their rights as citizens, and which he was happy to say they were ever permitted to have; and he could assure the meeting that if their Queen and country should again require their services, they would not fail to uphold the high character which the army and navy of England had so long and so deservedly enjoyed. He regretted the absence of Major Powell, who would have been able so much more efficiently to respond to the toast.

The chairman said he was then about to propose the toast of the evening—"Prosperity to the Haigh Agricultural Society." He felt great pleasure in congratulating the members, and those other persons who had honoured the show with their attendance, on the excellent display which they had witnessed in the field; for although he could not say that he was possessed of any great knowledge in agriculture, he could yet assure them that he felt great interest in the welfare of the Haigh Society, and that no exertions should be wanting on his part to carry out its benefits to the greatest extent. The society was most honourable, not only to its own members, but to all the friends to agricultural improvement. The meeting were aware that the society was established at the beginning of the year, since which period a very manifest improvement had taken place in the districts of its operations, and he hoped those improvements would continue to progress, so that all may be induced to imbibe a desire to profit by them. And in order to excite this desire, he would earnestly recommend to all the study of the valuable books placed at their disposal in the Haigh and Aspull Library. From those sources they might acquaint themselves with the most approved systems of agriculture adopted in England and Scotland; and unless they consented so to observe those improved methods, they would thereby cause the soil to become more and more deteriorated, and consequently less effective in its productive capabilites. It was no doubt the duty of both landlords and tenants to endeavour to produce the greatest quantity for the wants of their fellow creatures; to aid which laudable object, he trusted that at some day not distant, the soil of the neighbourhood would be able to prove itself a most efficient auxiliary. He did therefore hope that all would assist in the good work of rendering the country prosperous and happy, which would always be the most satisfactorily accomplished, by taking care that the greatly increasing population, should be well provided for. The toast was then drunk; and at the chairman's request, received nine times nine cheers, and a repetition of the clapping scene.

Mr. Taylor, the secretary, then read the Report of the Committee, as follows:—

"The committee, in presenting this their first report to the members of the Haigh Agricultural Society, beg to congratulate them on the progress made since its establishment, extending over a period of little more than eight months, and the general improved appearance of farms within the society's limits. The liberal support the society has received since its commencement has enabled your committee to fix the amount of premiums on a remunerating scale, and thereby induce competition, for the amount of premiums will, in many instances, cover the cost of labour and capital expended by the successful competitors, as well as leave them the full benefit resulting from the improvements. The number of competitors has been equal to your committee's expectation, considering the short time the society has been formed, and the premiums well contested. To this, however, there is one exception to which your committee feel it their duty specially to refer. One premium, viz.—'18. To the tenant, &c., £3,' has not been held of sufficient importance to induce active competition, a circumstance your committee regret, more especially so, as the whole of the materials necessary for the construction may be had from the landlord free of expense. Your committee hope the method of collecting and turning to profitable account the most valuable part of fard-yard manure will, in future, receive more general attention. The list of premiums for the year just ended appears to your committee to require revision; and the committee for the ensuing year will have several important alterations to make in the list, and additions to the amount of premiums. In conclusion, your committee have great satisfaction in referring to the prosperous state of the society's finances, as will appear from the treasurer's report, a circumstance which will enable the committee for the forthcoming year materially to extend the usefulness of the society."

Mr. Ormandy congratulated the meeting on behalf of the committee, on the very prosperous state of the society's affairs. The subscriptions amounted to £94 0s. 6d., to which a donation of £10 from the noble patron had been added. He might further state, as treasurer, he was enabled to say there was not one shilling of the subscriptions unpaid, for which he had to return his warmest thanks. And as he saw several gentlemen present whose names were not already in the list of subscribers, he felt sure they would early embrace the opportunity of enrolling themselves among the supporters of the society. The present amount, as he had said, was £94 0s. 6d., exclusive of the Earl of Balcarres's donation; the sums paid that day in premiums amounted to £38 15s., to which there was to be added a subscription of £10 to the Haigh and Aspull Library, which Lord Lindsay had established at his own expense, to which the members of the society had access; they should therefore have a balance on hand exceeding £42, less some expenses incurred that day, which had not yet been paid. Mr. Ormandy then read the list of subscribers, and at the conclusion was loudly cheered.

Mr. F. W. Hulton said he could not omit to make a remark or two, for as soon as he heard the treasurer speak about honorary members, his blood was up, as he heard their names mentioned, and his hand went instinctively into his pocket (he did not say this ostentatiously) to put himself in a position to become one of the number. There was an old saying—"Young blood will up," and he was one of those who, after the powder had been put into the gun, could not resist the desire of firing it off; he would therefore gladly give his sovereign, and as the readiest way to obtain the names of others, he would recommend that the book should be sent round to gratify the wishes of those gentlemen who were anxious to become subscribers. Mr. W. F. Hulton then stated how he became the possessor of an excellent boar, and expressed his readiness to show it to his friends or others who might call upon him for that purpose, promising that they should receive at his house the hospitable welcome which is due from one British farmer to another.

Different gentlemen then called out to become subscribers, but when some ten or a dozen, at a sovereign each, had subscribed, the treasurer said the plan being pursued would delay the other business of the evening, and he could fully rely upon gentlemen signifying their wishes to him on some future day.

The secretary, at the request of the chairman, next read over the list of the decisions; the successful candidates receiving their premiums on their names being called, and while doing so were warmly cheered:—

To the tenant who shall have his farm in the neatest and best order, a silver cup, the gift of the Earl of Balcarres—John Cunliffe.

To the tenant who shall plant the greatest length of thorn fence, not less than 300 yards, after the most approved method, £2—Thomas Marsh.

Ditto, not less than 100 yards, £1—Mrs. Jane Gibson.

To the tenant who shall cut, lay, and plash the greatest length of thorn fence, and back up the cop, the length to be not less than 500 yards, £2—Mrs. Jane Gibson.

Ditto, not less than 200 yards, £1—John Yates.

To the tenant occupying 30 acres and upwards, for the best crop of hay grass growing upon old meadow land, not less than 5 acres, not to be produced or assisted by irrigation, £2 10s.—Robert Dickinson.

Ditto, occupying 15 and under 30, not less than 3 acres, £1 10s.—James Rigby.

Ditto, occupying less than 15 acres, quantity not less than 2 acres, £1—John Sumner.

To the tenant occupying 30 acres and upwards, for the best crop of artificial grass, not less than 3 acres, £2—Jane Gibson.

Ditto, less than 30 acres, quantity not less than 2 acres, £1—John Yates.
Best crop of wheat, not less than 2 acres, £3—Jane Gibson.
Ditto, not less than 1 acre, £2—Benedict Turner.
Best crop of oats, not less than 2 acres, £2—Thomas Marsh.
Ditto, not less than 1 acre, £1—James Balfourd.

To the tenant who shall have his farm-yard, &c., in the best and neatest order, £1—Jane Gibson.

To the tenant who shall keep the best general stock of cattle on his farm in proportion to its extent, £2—Robert Dickinson.

Best crop of turnips, not less than 1 acre, £2—Joseph Nield.
Ditto, half-an-acre, £1—Thomas Marsh.
Best bull of any breed, £1—John Mather. 1 competitor.
Best cow, in calf or milk, £1—Edgard Lidyett. 13 competitors.
Best heifer, 2 years old and under 3, 15s.—John Lee. 11 competitors.
Best stirk, 1 year old and under 2, 10s.—John Balfour. 11 competitors.
Best calf, under 1 year old, 5s.—John Yates. 5 competitors.
Best brood mare, £1—John Yates. 8 competitors.
Best colt, 2 years old and under 3, 15s.—Betty Hope. 2 competitors.
Ditto, 1 year old, 10s.—Jane Gibson. 3 competitors.
Best boar, £1—Ralph Seddon. 1 competitor.
Best breeding sow, £1—Joseph Tarbuck. 5 competitors.
Best fat pig, 10s.—Peter Leigh. 5 competitors.
Best red cabbage, 2s. 6d.—Robert Selkirk. 2 competitors.
Best Scotch cabbage, 2s. 6d.—Ditto. 1 competitor.
Best Savoy cabbage, 2s. 6d.—Ditto. 1 competitor.
Best and heaviest onion, 2s. 6d.—Ditto. 3 competitors.
Best Swede turnip, 2s. 6d.—William Alker. 5 competitors.
Best white or yellow ditto, 2s. 6d.—John Hampson. 2 competitors.
Best mangel wurzel, 2s. 6d,—John Yates. 1 competitor.

Best sample of wheat, most suited to the soil of the district, 5s.—Thomas Howard. 4 competitors.

Ditto oats, 5s.—Thomas Howard. 4 competitors.

ADDITIONAL PRIZES GIVEN BY FRIENDS TO THE SOCIETY.

Second best cow, in calf or milk, 15s.—J. Mather. 13 competitors.
Third best ditto, 10s.—William Alker. 18 competitors.

The Rev. J. T. Brown rose to propose the next toast—"The Noble Patron of the Society." The committee had most properly congratulated the meeting on the great liberality of his lordship towards the society; that, however, was by no means saying enough. The noble lord's greatest merit was in being a resident landlord, and endeavouring by all the means within his power to promote not only the temporal but likewise the spiritual welfare of all around him; he was therefore thus one of the most truly liberal of landlords, and he would call upon the meeting most cordially to drink his health.

The toast was drunk, followed by loud and long-continued cheering, after which the band played the "Balcarres March."

The Hon. Captain Lindsay said he was extremely obliged to the company for the honour paid to his father, and to the rev. gentleman who proposed the toast. He was also sorry that his father was not present to return thanks for himself, but the state of his health prevented him from joining in celebrations like the present; he could, however, assure the meeting, that both he and Lord Lindsay felt a deep interest in the welfare of the society, and that they both entertained the greatest respect towards the gentlemen who compose the society.

Mr. W. F. Hulton rose to propose the next toast, and after paying a high compliment to the sex in general, proceeded to pass a warm eulogium on the noble lady who was the object of it; he also took occasion to express his own personal obligations for the great condescension and kindness which he had ever received from her. He then proposed "The Countess of Balcarres," adding with a kind of almost vehement earnestness, which spoke well for the sincerity with which the wish was offered —"May she live for a thousand years, and may her shadow never grow less."

The toast was drunk, and then followed the most deafening cheering and clapping.

The Hon. Charles H. Lindsay said he was most grateful to Mr. Hulton and the company. He was glad to see the kind feeling which was entertained towards his mother, for he well knew it was ever her desire to keep up a like feeling in her own heart, and in the hearts of others.

Mr. Gaskell said it had fallen to his lot to propose the health of a nobleman who had proved himself a great benefactor to the society, and he was sorry he had not the talents to do justice to those of the noble lord. High, however, as was that feeling of respect towards him, he would by no means desire to have it increased by any elevation which he might attain; but as "Lord Lindsay" he had now to propose him, and he would add, "may he long enjoy that title, and no other."

The Hon. Captain Lindsay acknowledged the toast. He was extremely sorry his noble relative was not present to witness the kind manner in which the toast had been proposed and drank. They were aware that Lord Lindsay had adopted habits and engaged in pursuits which tended to withdraw him from scenes of enjoyment. He had no doubt the meeting would concur with him in thinking that the literary works produced by his noble brother were highly creditable to his understanding, and he was sure it was his sincere wish that they might be found useful.

The Hon. Captain Lindsay said he would desire to propose the next toast—"The Mayor of Wigan, and Prosperity to the Town of Wigan."

They had the honour to have that gentleman then present. He had filled the office of mayor on several occasions, always with credit to himself, and to the advantage of the town; and he (the speaker) trusted that the prosperity of the town of Wigan might be very long continued.

Mr. Lord was most grateful for the toast, and particularly for its having been proposed by a member of that family whom they were all so delighted to honour. He was also sure, that the members of the family present would have been highly pleased in witnessing the respectful and cordial manner in which the healths of their noble relatives had been drunk; and he had no doubt the toast he should have the honour to propose, referring as it did, to another of those relatives, would be received in the same enthusiastic manner. He would first, however, beg to say, he regretted very much to have learnt there had been no competition for the premium for a tank, because he had had some experience in the benefits to be derived from one, and was therefore surprised to find that the tenants had evinced no desire to participate in those advantages. He had formed one, at a cost of about £10; and during the late long dry summer, the advantages he received from it were so great, that he thought the outlay had been already repaid to him. He could assure the tenants there was nothing like these tanks, to contain all the liquid manure from their farmsteads, which, most valuable as it is, must otherwise be wasted and lost. He must, however, in justice to landlords and tenants, say it was highly gratifying to see the improvements which had been made in land, and those which are still being carried on. He could well remember, when hunting the country some years ago, that a horse could seldom cover a fence at one leap, the ditches were so wide and the fences kept in so unseemly a state. Now, however, he observed that useless fences were ridded and the ditches filled up, and corn might be seen growing in places which never before produced anything worth having. These improvements must be exceedingly gratifying to all persons who take an interest in agriculture, and they could not fail to prove of great advantage to the neighbourhood. It would also be still further pleasing to the company to know that these improvements were taking place under the auspices of the Earl of Balcarres, and especially under those of his son, the honourable and highly-esteemed chairman. He then proposed "The Health of the President of the Society," which was drunk with every demonstration of admiration and respect.

The chairman rose to return thanks, and was loudly cheered. He was much obliged for the flattering manner in which his health had been proposed and drank. He little thought some few months ago, when he was engaged in begging, along with the active and much respected vice-presidents, for funds for the society, to see such a meeting as the one he had then the honour of addressing. He would not detain them in speaking of himself, but at once proceed to propose a toast which would meet with their approbation—it was the healths of our learned judges, —not the judges of assize,—but—

Mr. W. F. Hulton—The judges of the land.

The chairman—Exactly so; and thanks for the manner in which they have performed their arduous duties. He then gave "The Judges of the Land, Mr. Talbot and Mr. Newton." The toast was drunk with much cheering.

Mr. Talbot, after briefly apologizing for the unavoidable absence of his colleague, Mr. Newton, said they had thought proper to put down a few observations after making their survey of the farms, which, with the permission of the chairman, he would then read:—

"In viewing the farms and crops for awarding the premiums, and this being the first year of the Haigh Society, we thought that a few remarks would not be out of place respecting the management and crops generally. They may in some measure be a guide to show the society in succeeding years the state of agriculture in the district at its commencement. At the outset, then, we cannot do better than notice that which first attracted our observation. We found the pasture fields not like the generality of fields on the coal measure, growing rushes instead of grass. From inquiry, we were informed that the land was drained by the noble patron with tiles, on improved principles; that he has been pursuing this plan for years, and now the greatest part of his estates are freed from superfluous moisture. He does not charge the tenants any per centage for the outlay; he does it solely for the improvement of his estates, and to assist his tenantry to meet the lowering price of agricultural produce, and the increasing rates and taxes. It is a benefit to him, to his tenantry, and to the country at large; and if landlords generally would follow his example, it would be the means of increasing the prosperity of the country, and raising its agriculture equal to, and very likely above, that of other countries. We find the farming of the society's district similar to that of the neighbourhood on the coal measures, except that it is nearly free from rushes. The old system of cropping potatoes, wheat, and oats, in succession on the same land, without change, generally prevails, but in some cases they are succeeded by a crop of clover. While on the system of cropping and farming, we beg to make a few remarks which, if adopted, might be an improvement. The society's district is in the midst of a manufacturing circuit, which has for many years been improving in machinery and the means of production, and the agriculture should partake of similar improvements, to induce the persons engaged in it not to leave it for the manufactures. An improved system of agriculture is practised in the Lothians, and we beg to recommend an importation of that improvement into the society's limits. The land in the society's district is certainly of a clayey nature, and not adapted for profitable farming, growing natural grasses, which are generally of a sour and coarse nature. Natural meadows and pastures are not admitted in the Lothian farming. Rye-grass, clover, potatoes, and turnips, alternately with crops of corn and beans, and the cattle kept more on the soiling system, would be more productive both to tenant and landlord. Manure can be had at a short distance; and we recommend small and frequent sets to large and longer intervals between. The sooner there is a return from the outlay in manure, and the quicker and oftener the money is turned over, the greater is the profit. The greatest quantity of produce that can be got from the land, is generally the most profitable; and there is no system by which this object can be better obtained than by the Lothian system: it certainly wants more capital, skill, and labour, than the grazing system, or the grazing and artificial system together, but it will amply repay by the quantity produced. These remarks are intended more for the consideration of the society to encourage the system recommended, than for a hasty adoption of them by the farmers without further initiation. The crops of wheat, on the whole, we found fair, but those of oats poor. We could like to have seen them more free from weed; but we hope the encouragement held out by the noble patron will be an inducement to keep the land clean. We saw very few turnips. The hay-grass was a deficient crop, owing to the dry spring. We think it only justice to say a few words on Mr. Cunliffe's homestead and farm. We found the shippons and yards as clean as they could possibly be made; and we were told that we should always find them in that state. His house, and particularly the dairy, were extremely clean, and the arrangement of the dairy utensils excellent. His fences were neatly cut and trimmed, and his crops looked well. We should have had pleasure if we could have found other homesteads as clean, and the general management as good. Thorn fences throughout the country are much neglected; but we had much pleasure in seeing that the farmers in the society's district had attended to, and were improving their fences. We thought some of the enclosures small, and that fences might with advantage be removed. We are glad to find that unnecessary fences are in progress of removal. We should have been pleased if we could have found an award for reservoirs or tanks, for liquid manure. In order to show the value of liquid manure, suppose farm-yard 100, that of liquid manure of the cow would be 91, and that of the horse 16. In conclusion, we have pleasure in wishing the society prosperity, and hope that every year may introduce some new improvement to the benefit of the landlord, farmer, and the country in general. We cannot refrain from making another observation, that we found the farm buildings in as good or better repair and condition, than those of most of the nobility and gentry in the country."

The chairman next proposed "The Judges of Stock, Mr. Cannell and Mr. Martin," which was drunk with great cordiality.

Mr. Cannell briefly returned thanks. He and his colleague had endeavoured to make their decisions with the most perfect fairness, and they should be gratified to know they had given satisfaction. With respect to the stock shown, it was certainly not of the most superior description; nevertheless, there were some animals which were very creditable to their owners and the neighbourhood; and he had no doubt, if the tenants would avail themselves of the opportunities held out by the noble patron and president, they might in a short time possess a stock in the district which would command the favourable opinion of all who inspected it.

The Hon. Capt. Lindsay rose and said he had the health of two gentlemen to propose, which he was sure would be received with the greatest cordiality; it was that of the two vice-presidents—Mr. Peace and Mr. Glover. It would be useless for him to say much in their behalf, for they had already introduced themselves to notice by the able manner in which they had forwarded the interests of the society. He begged to congratulate them on the meeting and its establishment, which he believed to be one of the most useful things that had been introduced here for some time, imparting a spirit of emulation, and rewarding the perseverance and industry of that useful class of our community—the British farmer. He was sure they must be gratified by that day's proceedings, and so must also their worthy president, who had evinced great interest on behalf of the farmers, and to him also great credit was due. Mr. Glover had been of particular use to the society, by being enabled to give lectures to the tenants on very interesting subjects connected with their occupation, which he doubted not would be of infinite use to them; and from his perseverance, experience, and intelligence, would undoubtedly continue to be equally useful. Mr. Peace's department was that of attending to the mines, yet he had paid great attention to the well-being of the society and farmers, and his kind support and attention deserved great praise. He was sure their healths would be drank with pleasure, hoping that they will long continue with us.

Mr. Glover returned thanks, and felt glad to be considered a useful character amongst them. He was overjoyed with the success of the undertaking thus far, and trusted that the benefits of the society would be seen by all, and felt by every member. He was anxious to improve the tenants both in mind and pocket, for which his exertions and study for the welfare of the farmers should not be wanting; for he believed by improving the land a profit was not only given to the tenants, but also great good was conferred upon the community at large. He would not then trespass upon their time, but begged they would receive his heartfelt thanks for the kind manner in which they drank his health, and would leave his worthy colleague to speak for himself.

Mr. Peace thanked them, but considered that duty could not have been in better hands than Mr. Glover's. However, he could only say that so far as he could carry out the usefulness of the society, he was glad to do it; yet he was no farmer; still it was a very interesting subject to him, and whatever assistance he could render he would do it willingly.

The Hon. C. H. Lindsay had to offer to their notice two very essential officers of the society. The society was then what he termed an infant, and they had been its nurses in every way. To-day it had had an examination, and he rejoiced to find that it had proved a very apt scholar, and would undoubtedly continue to prosper under such excellent hands as those of those of the treasurer and secretary—Mr. Ormandy and Mr. Taylor. He begged to propose their health with three times three cheers.

Mr. Ormandy wished he could give expression to his feelings for the kind manner they had received the health of himself and Mr. Taylor. He wished he was worthy of the honour they had conferred upon him; however, he had done all he could, and was very anxious to carry out the objects of the society. But to himself there was very little due, for when he remembered how the worthy president took up the matter, when he knew that he accompanied him to every tenant, and made himself an equal amongst them, shaking each one by the hand, and mingling with them in the kindest manner, he thought to him was due great praise and credit, for to him they were indebted for that day's gratifying scene. And he rejoiced more, because now every tenant had a security for the improvements the society wished to have accomplished; *their noble patron having offered them their farms on leases, from five to twenty-one years, and, in addition to which, draining is done free of expense for every tenant, and without any charge of interest upon the outlay.* He is also ready to assist in every permanent improvement, deeming the comfort, happiness, and prosperity of his tenantry a matter worthy of his best attention. His agent, Mr. J. Glover, also was one who had their welfare at heart, and exerted himself on their behalf, in giving sound and useful advice to them on the improvement of their farms, and he had no doubt by the liberality of the noble patron, and the exertions of the society, we should soon see better farming and more wealthy tenantry. He would do all he could, both in the practice and theory to improve the system, and increase the production of the soil, and he would refer them to the increased productiveness of his own farm, as an instance of what might be accomplished by better methods.

Mr. Taylor thanked them, and felt glad that he was useful to them in any way; he would only add, that he did all he could with the greatest pleasure.

Mr. Ainsworth begged to propose the health of the committee of management, for to them great credit was due for the manner they had conducted their proceedings. He was a perfect stranger amongst them, but he warmly congratulated them on that day's proceedings, and he was sure every one must have been pleased to witness the conduct of the worthy chairman; to him great credit was due, as well as to the other members of the committee. He was glad to hear such pleasing remarks on the noble patron's behaviour to his tenantry; he considered it an example worthy of imitation, and he saw nothing wanting but the perseverance of the tenantry. Their landlord is willing to assist them, and they certainly, for their own sakes, would assist themselves, and join their exertions to those of his, and the friends of the society. He believed land might be made to raise twice its present produce, were it cultivated to the full extent on improved systems. He advocated green crops and soiling as the best means of improvement, for in this he had made some trials, and got from them a most beneficial result. He regarded this as a meeting at which much intelligence ought to be communicated, and concluded by proposing "The Health of the Committee of Management."

Mr. Peace proposed "The Health of the Tenantry of the Earl of Balcarres," to which Mr. Evans responded.

The president gave "The Health of the Successful Competitors."

The Hon. C. H. Lindsay, after a very amusing and interesting introduction, proposed "The Lancashire Witches."

After this the chairman retired, and J. Lord, Esq., was elected *pro tem.* Shortly after the meeting broke up, every one being fully satisfied with the day's proceedings and the evening's conviviality.

RETROSPECT OF 1844.

By Mr. TOWERS, Member R. A. S. and H. Society of London.

About this period of last year I addressed a Retrospect of 1843 to my friend, Samuel Taylor, Esq., who kindly appended a variety of observations pertinent to the subject of my paper.

It will hardly fail to come under the notice of every one really interested in the weather, as respects the crops of agriculture, that no one year passes without observations being made in the newspapers, or elsewhere, to the effect that there is, or has been, something altogether "extraordinary,"—"out of the common course of events,"—"not recollected by the oldest man living," &c., &c. There are, doubtless, *peculiarities* in every season—some phenomenon which cannot be retraced by the memory, yet we may safely conclude that "what *is*, hath already been;" and thus, although the two years, 1843 and 1844, have presented the most decided contrast to each other—the spring of the former, to the very portal of summer, being deluged by untimely rains, while that of the latter was parched to aridity—yet it may be safely believed, that there was nothing unusual therein; dry seasons and wet seasons being of no rare occurrence, and perfectly conformable to the laws of meteorology.

I shall say very little of 1843 or its crops; the nature of the weather and its effects are before the public. Notwithstanding the most lugubrious anticipations, provisions have been excellent, abundant, and moderately cheap; *bread never better* in quality; what value is then to be attached to the reports in "England's best instructor?" Verily it amounts to little more than that of "a tale told by an idiot, full of sound and fury, signifying nothing."

In reviewing the weather of this year, 1844—its concomitants and peculiar effects upon the crops—it will be better to commence with the first day; for January was a month of extraordinary beauty. The corn was then in a state of perfection; not winter-proud, but strong and verdant. On the 1st of January the sun shone brilliantly: the temperature 30 to 38°. The second day was equally fine, but at night the mercury receded to 24° (8 of frost), and before daybreak of the 3rd the instrument had registed 23° of frost (9° of Fahrenheit). This great and rapid descent proved extremely injurious to the plants of the cabbage family, many of which were full of sap. It had produced the effects thus alluded to by Mr. Taylor, in a quotation which we find at vol. 7, p. 532:—

"When in the case of a given plant the temperature is permanently maintained at a much higher degree than the species requires, it is over-excited. Such plants become soft and watery, with thin leaves, long joints, slender stems, and with no disposition to produce flowers. *A slight lowering of temperature affects them more than a much greater lowering would have done under other circumstances,*" &c. What, then, could we expect from a sudden fall of 23 degrees? Luckily the *wheat* was in the condition described by me, and by no means rank, otherwise it would have been prostrated like the brassicas, but it lived and prospered, though a check had been given which the succeeding splendour and genial warmth of the entire month (34½° the average minimum) did not surmount.

I have in a former paper alluded to February and part of March, and shall not reiterate; but the signal asperity of January 3rd, which certainly did not continue six hours, ought to be chronicled as a phenomenon of very rare occurrence. The same may be said of the excessive aridity which so immediately followed the copious rains of March; and this leads me from the observation of results close at hand, to urge the necessity of sowing spring corn without any delay, whenever the land is in a fitting condition to receive the seed. Land, it is true, differs much. A light and friable loam, rendered such not by the *quantity* of gritty sand, but by the character of its silicious ingredient, is always ready, with the lapse of a day or two after swamping rains; but there are other loams, and those, too, which by analysis are proved to contain above 85 parts in the 100 of sand, that so clod and bind, if disturbed after a rainy season, as to become intractable when exposed to solar heat. Such is the constitution of the greater part of a large breadth which a neighbour of mine had destined for his spring barley. March, after the equinox, became suddenly dry: a blazing sun succeeded. The land had been ploughed, but it became cloddy, and the opportunity was lost. The seed sown in April never wholly vegetated; and as to clover, it could not be sown at all. A small portion of the same land had been cropped in March: *that* succeeded. The main breadth was lost: a few scattering plants arose, and came into miserable ear after the rain of July, and those I saw mowed green late in September. The failure was by no means singular; numbers of fields in the east of Berkshire presented the same anomalous appearance; whereas in Surrey, and in a part not very remote from Croydon, most beautiful crops of barley abounded, chiefly in consequence of having been sown earlier, in soil less abounding with gravel grit, and because the counties east of London, and indeed the metropolis itself, were blessed with a steady, profuse rain on the 26th of June.

Of all the meliorators of a harsh and binding loam which ever came under my observation, coal-ashes are the best. This material never binds, and while it breaks up the texture, it adds more or less of soluble salts, which, after all, will be found to be the real fertilizers; and this leads again to the subject of *steeping seeds,* and the rationale of the practice.

The farmers of England are inapt scholars; indeed, very few of them are readers at all. It is, however, to be hoped that agriculture will receive a stimulus in other quarters, and that landlords, by the results of their efforts in creating educational establishments, will obtain a view of their own interests, and learn what they ought to do for their tenants.

Mr. Campbell, however laudable his efforts in promulgating the effects of his chemical liquids, had been theoretically anticipated by the writer of a work entitled *The Practical Farmer,* which was published in 1759. From it an extract is given in one or more of the periodicals, which merits attention. The first *principle* inculcated is the impregnation of any given seed with its *own proper constituents.* Thus it observes—

"Take a quantity of the grain you are to sow (a bushel will take five pails of water), and boil it in a copper till the grain burst, and the water thereby becomes impregnated with the essential salts of such grain. Strain your liquor, and give the corn to the poultry, that there may be no waste. While the liquor is hot, put in three pounds of nitre, that it may dissolve, and add four or five pailsful of the water which drains from the dunghill, or urine of any sort; and in this prepared liquor steep the grain about twenty-four hours. Let the liquor be four inches above the corn in the vat, because the corn will swell and imbibe it. Then take the grain and let it dry in the shade, or sift lime* over it, which will dry it sooner, *and sow one-third less* corn than usual, and you will assuredly find the benefit twenty-fold."

Mr. Henry Briggs, of Overton, Yorkshire, who has favoured us with this *pre*-evidence, if I may so style it, of Mr. Campbell's correct views, justly appreciates the merit of the old writer, and of his curious work, when he observes that the latter "is written evidently by an enquiring spirit; by one who would, no doubt, had he lived in the present age, have been among the foremost to take advantage of chemical science to forward improvements in agriculture."

Mr. Campbell has combined ammoniacal and nitrous salts, and his packages contain quantities sufficient to prepare ten or twelve gallons of steep. The extract just given tells us, that in addition to the liquid extract obtained from the boiled seed, 3 *lbs. of nitrate of potassa* (saltpetre), and a portion of *urea* (at least of some combination of azote, or nitrogen, according to the condition of the urine), which would furnish some *ammonia*. The extract further instructs, that 3 lbs. of nitre are sufficient for as much corn as will sow *an acre or more:* it also adds—"You must pour your prepared liquor warm upon corn, and stop all as close as you can, for that causes the salts to be put in motion. The excellency of this receipt is obvious in all cases:—1st, it saves seed; 2nd, it in some measure supplies the defect of full dressing the land, by the seed *being full of riches* when sown; 3rd, that it produces a greater quantity than ordinary; lastly, by this steeping the grain will make its way out of the ground if drought succeed. One dry summer, when I was so fortunate as to sow, for the first time, the barley after this receipt, it brought up my crop more even than my neighbours', to the admiration of the beholder, and I had more on an acre than ever I had—I believe I may say double."

Upon the two last points the evidence I adduced last summer, from direct observation, of steeped barley sown side by side with other barley *not steeped,* forcibly bears. I saw a marked line of division; the whole plot taller, more verdant, fuller in ear, and quite as close on the ground, though much less seed had been sown; and really, when we perceive that to *the soluble salts of the soil* the ascending sap owes its nutritious qualities, so far as the ground is concerned, it becomes more than probable, that the quantity of salts imbibed by the seed may be almost sufficient to supply the demands of the germinating plant. The potassa and ammonia discoverable in earth exist in very small quantities. The manure furnishes, perhaps, a greater proportion; but as to the charcoal contained in the form of *humus*, that must go for nothing till it pass into the atmosphere in the form of carbonic acid gas.

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* "Lime."—This would be unchemical, and therefore injudicious. I steeped lately seeds of two kinds of wheat in Campbell's wheat preparation, for 48 and 60 hours; dried the seeds, and left one sample untouched for a fortnight. I then dropped a very small quantity of potass liquor in a glass, and placed three of the steeped seeds in it, moving them about till the skin of the seeds was moistened: the potassa attracted the acid from the ammoniacal salt of the steep, and liberated gaseous ammonia very sensibly to the smell, and more so to the muriatic acid test. So would it be with *lime:* the ammonia would be thereby gasified and lost.

Our old theory of *soluble* manure is too vicious to be sustained, therefore we cannot justly condemn the modern theory, and the feasibility of steeping, until ample experience shall have repudiated both. Again, it is not at all improbable, that by steeping in nitrogenous salts, the seed will be armed to some extent, if not effectually, against wire-worm. Before we *revile*, it is a duty to *try!*

In my experiment on *dibbling*, I proved the very great productive power of single seeds: others have gone far beyond me. I am now steeping seed wheat to commence another (and comparative) experiment; and a scientific gentleman, just become a neighbour, will cooperate on a scale of considerable extent, so that we may hope to arrive at some established facts.

But that such *have* been determined, there can be no doubt. The only reasonable argument that can be advanced in favour of close sowing, to the extent of three or four bushels per acre, is founded upon the probable depredations of birds and insects, and we must admit that much seed is thereby lost; yet the garden is liable as the field to similar losses, and all the theory of horticulture is impugned by the practice of thick sowing. Practice also shows that plants of wheat tiller, sprout, or braird (to adopt various terms for the same thing), much more abundantly when space sufficient is left for ample development. Mr. Morton, of Chester-hill, Gloucestershire, has given ample evidence. Numerous experiments prove beyond question that a plot sown economically remains as free from blots and patches as another whereon the seed has been profusely scattered; for it must have come under the observation of every one, that the plants are never devoured in thinning order, but, on the contrary, that whole yards are left bare in numerous places, while in others three, six, or even dozens of plants remain huddled together to struggle as best they may, till either all but the strongest are extinguished, or some two or three retain just power enough to send up one single stem, in lieu of ten or twenty.

Mr. Mechi, by the intuition of a comprehensive mind, has not only grasped the truth, but reduced it to practical evidence. He had said, in one of his powerful letters,—"We must reform, and quickly too, some of our errors, both as capitalists and farmers: the one lends his money to strengthen foreign competition in agriculture, commerce, and manufactures; the other sows *uselessly and prejudicially more seed than the total amount of our wheat importation;* the extra quantity sown actually diminishing the produce to a similar extent!"—and now he shows by a printed statement, that the wheat of the late harvest, when dressed, weighed sixty-four pounds per bushel, and over *four* quarters the acre; while from another field the yield was five quarters one bushel, and of a still finer quality. The green crops, particularly that of rape, are actually surpassing; and these results, be it noted, were obtained from land originally so poor and bad, that "the Essex people considered it never could be improved even to become of tolerable goodness."

There are a few bright examples in the land at this time, but these the leaseless farmer and the embarrassed landlord *cannot*—they have not the means—imitate; and we must therefore wait the operations of influential societies, or rather of legislative enactments.

The last notice of the spring weather brought us to the 17th of May (see the article on *Agricultural Facts,* No. 30, July). *Fifty days* of almost continuous drought had then been registered, and were 50 more added to the catalogue, bringing us to the first week of July, there would be little of error, so far as Berkshire is concerned. Consequences have since been detailed with great exaggerations on the part of the public reporters, but still we must own that for barley, oats, clover, and hay, the weather was seriously too dry. Yet such events have their uses; the earth is purified, vast heat is accumulated, and temporary, partial losses are always in the end amply compensated. A writer (Colonel Mackenzie) has told the world that the late season was foreseen—predicted from long observation of the cycle of the winds. He considers the spring and summer of 1844 as the dryest, the most glorious, such a season as few, if any, can retrace; and he predicts another fine year—we should say a finer, in so far that a greater portion of rain is to intermediate with the sunny periods.

Facts must decide where theory is, at the best, ambiguous; but with respect to the past, there must be numbers living who can recollect the years 1800, 1808, 1818, and 1825. If there were not numerically so many brilliant days in those years, assuredly the general temperature was higher, and the effects of the drought more severely felt. The harvests also were housed more early, and with fewer failures in the spring corn.

With *July* a change of weather occurred. Thunder introduced showers, and there were at least ten days more or less rainy in the month. The temperature also was very much reduced; the only hot days being the 22nd and three succeeding. The *wheat* cutting commenced in our vicinity, west of Maidenhead, about the 26th. I have seen wheat ready for the rick in 1834 about the 12th, and in 1835 little remained afield early in August. The wheat harvest of 1844 can by no means be considered early, and this circumstance, connected as it is with the very great predominance of sunny weather, can only be accounted for by the low average temperature of July. On the 6th the maximum was only 57°, and on the 19th the night thermometer marked 45°. There was also an absence of sun from the 2nd to the 7th day inclusive. July is certainly the rainy period of our islands; but if it prove cold, as well as showery, the crops, whatever the previous temperature, are invariably retarded.

August came in pretty fine, but very cool—50° minimum, 58° maximum. My averages of the whole month were—lowest 48° 6 cents, highest 67°. Northerly winds, a point or more to the west, prevailed during twenty-two days; easterly winds about three days. At the end, the remaining five days had the current south and to west. The weather was superb in the last week; but there was little heat, the highest range here being marked 74° on the 31st. *Wheat* in Berkshire was pretty well secured by the 12th, and never was it seen in higher condition. *Barley* was very short, and, as before stated, unequal. Oats better, and perfectly well got in; though in some fields, sown late, they remain (and promised to do so) green and worthless.

Our dry weather remained, as if unalterable; turnips drooped; clover produced no latter crop; and numbers of trees dropped their leaves. This I had occasion to notice, particularly in the vicinity of Wokingham; and, among other circumstances, it tends further to confirm the certain evil resulting from hedge-row trees around corn land; for, while it was apparent beyond question that acres of the corn became impoverished, the plants poor, single-stalked, *without a tiller*, the arid condition of the trees themselves evinced that they had been the instruments by which all the moisture had been sucked out of the land, to the extent of at least twenty feet abreast of the rows.

The following passage, from an agricultural letter by Mr. Mechi, is pertinent to the subject—"I have been found fault with for removing the trees—'spoiling the landscape and beauties of the country'—as if farming were not a *business*, and carried on for *profit* rather than appearance." "Let us grow corn instead of timber, fences, and rubbish: we can do better without one than the other; besides, what a gross folly it is to grow our own timber in corn-fields, at a cost of four shillings a foot (I am sure it costs more), when we can import it at one-third of the price."

I lately inspected a beautiful model farm, formed without any contemplation of expense, by a rich owner of the land, who had entrusted the management to an enterprising Scotch bailiff. House—barns—bays—steam-engine house—all and everything new, of the best brick, slated. Manure tanks, comprising drainage of the liquids, complete. Everything denoted a resolution to carry out farming by the most liberal appliances. But the one vice of abundance of timber, hedge-rows, and fences, gave lamentable promise that there would be plenty of game, and of vermin to devour, and of weeds to pester the land, grown upon banks and in broad wastes, amounting in the aggregate to acres, every foot of which might have availed in the otherwise scientific, yet simple, orderly mode of cultivation adopted. It is always to be regretted when landed proprietors permit wood and game preserves to bound their arable land. In my vicinity the ravages committed are horrible; I dare not say to what extent; but the corn-fields—not on one farm only, but on half the farms of the large property—assume an aspect that should not be permitted to exist where there are any pretensions to fellow feeling.

September came in beautifully, and very warm, and so it continued till the 5th: then there was thunder, followed by showery weather. All the wheat, however, was safe; but nothing could advance or retard the barley and oats of that irregular growth to which I have alluded. Turnips progressed pretty well, and in places were fine. During the intermediate periods of drought some fields had become patchy, and presented a most sickly aspect, but by hoeing, and the later showers, the plant revived wonderfully. The average maximum temperature I register at 65° 33 cts. There were twelve days of north-east and east winds; eight of southerly, chiefly by west; and ten of north and north-west. The hygrometer generally indicated a dry state of atmosphere; and if we may trust the equinoctial prognostic (22nd), the weather during winter may be expected to be dry, with a prevalence of north-east wind. September was a fine month, but could not compete with its namesake of 1843.

October was changeable throughout. There were seventeen days wherein it rained more or less; and rain fell in profusion after the thunder-storms of the 14th. The land became amply satiated—a great mercy—inasmuch as wells and water-courses had failed in several places.

Wheat sowing began with us about the 15th, and as the land turned up beautifully, so soon as the surface moisture had passed into the subsoil, a finer seed-bed had seldom been wrought.

I find not one of our farmers willing to try the effects of Campbell's steep for seed wheat. This is to be regretted; because it appears probable that, independent of the advantages derivable from the steep as a fertilizer, the seed itself is rendered proof against the wire-worm.

Mr. Rigby Wason, who addressed the meeting held by the *Agricultural Chemistry Association* at Glasgow, on Wednesday, October 16th, observed, that he did not think Campbell's mixture any better, as a remedy for *smut*, than common salt; yet, "*when* the grain was steeped he *was never troubled with wire-worm.*"

Let Mr. Wason, or any other experimenter, establish this latter point, and he will confer a great boon on agriculture; and especially as we are told, that by the common salt steep, made so strong as to support an egg, the vitality of the seed is never affected, though it remain in the liquor full 60 hours.

Of the utility or non-utility of *steeping* corn for seed there rests some doubt; and, in fact, we must admit in this, as in all things, that *direct*, and what some esteem *conclusive experiment*, cannot bring conviction to all, because there are differences of soil, &c., which can neither be obviated nor explained. Mr. John Morton—a weighty authority—gives it as his opinion that little can be expected from steeps, on the following grounds—"Nature," he observes, "has given to every seed the means of producing its kind: it only requires moisture, warmth, and good, *deeply* cultivated soil, to start the seed till it has been provided with roots for its future support." He appears to have tried some steeps ineffectually—that is, without satisfactory results; and has arrived at the conclusion—certainly correct—that in investigating the phenomena of germination, we may arrive at results on one occasion which cannot be attained at another; for there are circumstances connected with the first stages of vegetation over which we have no control, and which we cannot even detect.

The *impregnation of seeds by nitre*, sulphate of ammonia, or of the two mixed, effected by dissolving the salts in about twelve times their weight of water, is presumed to supply elements congenial with those conferred by nature. Time and experiments in *all soils* and *situations* can alone bring the facts to issue. If, however, as before observed, we gain security from vermin, and incur no danger of doing injury to vital power, cultivators are much to blame who refrain from employing agents which might economize seed to the extent of one-third, and produce a stronger and more bulky return; all for the cost of a few shillings, and a little extra trouble, or rather manipulation.

The *lowest* average temperature of all the nights in October I quote at 43°; that is $2\frac{3}{10}$ higher than that of 1843. The coldest morning was the 23rd, when the self-regulating thermometer registered 29° Fahrenheit. The frost departed forthwith. The wind had been south-east; yet, although it had veered to north and north-east, the morning of the 26th was, at its minimus, 46°—i. e., 17° higher. Thus, then, there has been no frost; whereas in 1843 there was a week of real severity between the 15th and 22nd. The warmest day with us was the 10th; the maximum being 64°. The wind had a westerly direction during the first week; it then veered to south-east, but returned to its old quarter, and fluctuated between south-west and north-west till the 21st: its force was not great, if we except the 2nd day, though, at an average, it was lively. From the 21st to the end easterly winds prevailed, but brought no severe weather. During this generally cloudy season the barometer rose a few tenths above 30 inches (fair), otherwise the mercury was low. October has been a rainy month, and at its close the ground was rather too wet for the wheat which still remained to be sown. It closed beautifully.

November came in wet: barometer, 29 in. 55 cts. maximum; 29 in. 30 cts. minimum. Average temperature, 45°. Wind east by south. Every day was showery; the 2nd profusely wet; so that seed sowing in heavy land ceased.

On the 4th I effected the sowing of my wheats as a comparative experiment. Thus: one row of the brown chevalier, dibbled, two seeds in a hole, the seed steeped 48 hours in Campbell's compound ammoniacal liquid; one row of very fine white wheat, steeped 60 hours; and a third row of the same seed, entirely unprepared. The holes were seven inches asunder; the rows one foot apart; the site unmanured otherwise than by burying under the surface the chopped-up haulm of a kidney bean crop; the soil a firm and rather adhesive hazel loam. A neighbour is carrying out his trial by sowing very thinly in drill, to the extent of an acre. The results will be closely watched and reported.

Autumnal-sown wheat always developes two series of roots; the first, which precede the seed-leaves, trace horizontally, and continue through the winter. They are occasionally so near the surface as to be exposed, and raised up on one side, by a forcible wind, or a drifting fall of snow. The second series generally descends from a sort of collar, or ring, formed perhaps half-an-inch above the first roots, and at the point whence the tillers emerge. These roots tap directly down, and are generally protruded in March. They go very deep, and have been traced six feet. Hence deep tillage, in ground thoroughly drained, has been found to produce an enormous crop. Our colleges, if such come into proper activity, ought to ascertain and demonstrate such facts, leaving nothing in doubt, or unreported, which can be brought to the proof.

I bring up my report to the 9th November inclusive; now perfectly fine; the sun powerful, with a maximum temperature of 54°. Wind south-west. Barometer, 28 in. 99 cents at 8 a.m.

There has not been one fine day in the month, with this single exception, therefore the operations in the field are suspended. And here we may aptly introduce a consideration of no little moment in agricultural affairs.

There is not one single point of practice that is not doubted and contested: thus, the most clear, and, to appearance, conclusive experiments in routine cropping, preparation of the soil, steeping, with a view to the prevention of smut or insect, drill or dibble, *thin* or *thick* sowing, are unsatisfactory, and produce few corresponding results. Liberality, therefore, requires that every allowance be made for differences of soil, of manure, of locality, &c., &c. There are general principles, however, which ought to carry weight everywhere, and it is with pleasure, that I can close this article by an appeal to the practice of Mr. Hewitt Davis, as detailed in a late number of the Maidstone Gazette. I know enough of the locality of the farm, and the nature of the soil, to authorize me to vouch for the great improvements that must have been made under circumstances so unpropitious.

In September a deputation of the Maidstone Farmers' Club was appointed to inspect Mr. Davis's Surrey farms. It met him, and thus, on the 24th October, gave in the following report:—

"Spring Park Farm, about two miles from Croydon, consists of about 200 acres. The most striking feature observable on entering the land was the care that had been taken, by grubbing hedge-rows, &c., to lay the land open to sun and air. The *soil of this farm consists of* *black sand and beach gravel*, with a subsoil of white sand and gravel. The *moor-pan* formerly consisted of exceedingly hard conglomerated masses of gravel and, apparently, ferruginous sand, some of which were so large as to require six horses to draw them off the field. They are similar to what is called 'pudding-stone,' and the soil is evidently, from the appearance, a very inferior one, requiring pressure to consolidate it. Previous to Mr. Davis's occupation, a field, termed 'Starve Acre,' from the unproductive quality, would scarcely grow anything; but under his management it has become the best on the farm, and has produced, with *thin* sowing, no less than *five* quarters of wheat per acre. The whole of this apparently intractable land has been subsoiled, and a very large portion drained, by Mr. Davis; who, although his lease has only five years to run, is now draining a further portion, four feet deep; the labour alone costing him 9d. per rod. So convinced is Mr. Davis of the value of draining, that he believes even this expense will be fully repaid him. His practice is, to lay the land in ridges, varying from 12 to 24 feet in width.

"The seed having been got in, he generally runs Smith of Deanston's subsoil plough down each furrow between the ridges, even through the drained land. With reference to the system of *thin sowing*, the deputation had an opportunity of seeing the stubbles that were still remaining unbroken. The strength of the stubble-roots was remarkable; the plants were found to have tillered from eight to ten stalks each. The next criterion for judging was Mr. Davis's stack-yard, consisting of five large stacks of wheat, two of oats, two of buck-wheat, one of pulse, and three of hay. Besides these stacks, there was a barn full of pulse, and another of wheat and barley.

"The appearance of the crops was excellent. The straw was exceedingly strong, and the ear was very fine. The pulse crops were remarkably well podded. The wheat was the Essex rough chaff, which Mr. D. had been told could not be grown on the system of thin sowing, as it had been said that thin sowing produced mildew, a disease to which this sort was particularly liable. Mr. D. states, however, that mildew is a disease that he has scarcely ever been troubled with."

There follows an ample detail of rotation, with descriptions of the mode of ploughing, cropping, and general culture, too copious to be now quoted. I have myself proved what thin dibble-sowing will effect, without the loss of a plant; I have seen the ruinous contest which is carried on by plants too thickly congregated; but I am prepared to believe, that neither the dibble nor parsimony of seed will do alike well in all sites. Our colleges are called upon to decide these, and all other questions; and until these institutions become so general as to embrace every county, and are so ably conducted as to meet every question, agriculture will remain in arrear of all other sciences.

I. T.

November 10, 1844.

LORD WILLOUGHBY D' ERESBY'S PLAN FOR RELIEVING THE DISTRESS OF THE LABOURER.

TO THE EDITOR OF THE "TIMES."

SIR,

The sympathy you evince for the distressing condition of the agricultural labourers induces me to hope that the following remarks may not be unacceptable. The remedy is in the hands of the government of the country and its landed proprietors, to whom respectively my suggestions are addressed.

As regards any *government* measure of relief, I will say, in a word, that the only principle upon which it can proceed must be that of providing *work* for the labourer, instead of the system at present pursued. This might be done simply and effectually by the adoption of either of the following plans, or by a judicious combination of them:—

I would propose, *in the first place,* that, in accordance with the recommendation of a committee of the House of Commons, the clauses of the present Highway Act for forming parishes into districts and for appointing district surveyors, be made *compulsory;* that the appointment of the surveyors and the management of the highways devolve upon the board of guardians; and that labourers in want of work be employed by the surveyors under the authority of the board, being paid by the piece, and at a rate of remuneration lower by 20 per cent than the average wages of independent labourers in the neighbourhood. I am satisfied that the offer of the workhouse as a test of destitution might thus be safely withdrawn, as no man would accept the inferior wages and hard labour of the surveyor unless compelled by actual necessity.

My *second proposal* is, that a *labour-rate* be established by law, to be employed solely in the payment of agricultural labourers who require employment, and to be levied exclusively on lands of the value of £20 a year and upwards, as persons assessed below that amount are unable to employ labourers, and very frequently in difficulties themselves. (See note 1.)

A *third measure* would be to prohibit the admission into the workhouse of unemployed labourers, excepting a very small proportion (say one in ten) of the whole number who might at any time be without work; the remaining nine to be entitled to out-door relief sufficient for the maintenance of themselves and families. This would operate as a strong inducement to the ratepayers to provide the labourers with work; it would put an end to offers of employment at low wages, with the alternative of the workhouse; while at the same time, by permitting the offer of the house in a few cases, it would furnish a security against wilful and profligate idleness.

On the adoption of any of these plans, it should be rendered penal to combine for the purpose of defeating their operation. It is a frequent practice at present to collect private subscriptions as well as the parochial rates, with the view of giving a cheaper relief than that authorised by law and sanctioned by the board of guardians; the object being, under the disguise of charity, to relieve the pockets of the ratepayers by obliging the labourer, under threat of the workhouse, to accept an inferior rate of wages, or a lower amount of relief than would be ordered him by the board. And I may take this occasion to reprobate another injurious practice by which many children are deprived of the opportunity of education. The young children of widows and others receiving out-door relief are compelled to work; their trifling earnings are deducted from the relief given to the parents, whose forlorn condition is rendered even more miserable by increased expenses in food and clothing consequent upon the labour and exposure of the children. The employment of such children under the age of twelve should be prohibited by law.

The *last measure* for the relief of the labourer falling within the province of *government* which I am prepared to recommend, is the encouragement of well-combined plans of *emigration*, in which labourers contributing their labour and binding themselves to the fulfilment of their part in the undertaking during a term of years, would at the expiration of the term receive an equitable share upon the division of the lands reclaimed. (See note 2.)

By carrying out one or more of these measures, or rather a combination of them, all with suitable modifications, the government of this country would, I am convinced, greatly ameliorate the condition of the agricultural labourer, and that upon the only sound and safe principle—the only principle that is consistent with his independence and self-respect—viz., giving him *occupation* instead of *alms*.

I now proceed to remedies which are in the hands of *individuals*; and these, though ineffectual unless supported by legislative interference, are simple in their application, and in no respect open to objection. Let the landed proprietors act upon a proper sense of their responsibilities, and not be deterred by any personal trouble, or the *appearance* (for I am persuaded it would be only an appearance) of personal sacrifice, and I venture to predict that we shall hear much less of the suffering and disorder of the labouring population.

It will not be out of place here to remark, that I believe the existing distress to be aggravated in no small degree by the recent changes in the laws affecting agricultural produce. At *any* time it would be natural that the tenant (who has agreed to take upon himself the payment of the rates) should endeavour to reduce the burden; but under the present depression of prices, it cannot be expected that he should fulfil his obligation, or find work for the unemployed labourers, which many landlords have insisted on, unless he be relieved by a corresponding reduction of rent.

Having hazarded this observation, I proceed to express my conviction that *a judicious system of allotment* is calculated in the highest degree to ensure the well-being, both moral and physical, of the agricultural labourer.

Let the landed proprietor *begin* by putting a *moderate rent* upon his cottages, refusing in every case to let them in conjunction with the farms. It is unreasonable to expect a labouring man to lay by more than 1s. a week at the very utmost to meet his rent, yet £5 a year is not an uncommon rental. Let *every man of good character* upon an estate occupy *a rood of garden ground*. To a certain proportion (perhaps one half) of the whole number, let an additional allotment be made of three acres of pasture land, or so much as will enable them to keep a cow and three or four sheep; and, as a still further stimulus to industry and frugality, let there be on the estate a certain number of small farms of 40 acres, or large enough to employ two horses, and support a family above the condition of a labourer, thus encouraging the industrious by a prospect of advancement in life, and restoring to the community a most valuable class of men, now almost extinct, between the mere labourer and the large farmer. At present the agricultural labourer is deprived even of *hope*; he has no opening before him—nothing to look forward to but a life of toil and an old age of destitution. (See note 3.)

It must, however, be remembered, that such a system of allotment as I have recommended is on no account to be looked upon as affording the labourer the means of *support*, or rendering him independent of his *regular work*. It is a means of bettering his condition, and giving him some comforts and advantages; but these he only acquires by working at extra hours. It delivers him also from the ruinous consequences of *occasional* want of employment, to which he is liable, even if all other causes were removed, from bad weather alone—such consequences, for instance, as becoming involved in debt with the small shopkeepers, whose prices are naturally high in proportion to the length of credit and the uncertainty of payment.

I have now laid before you my sentiments upon this anxious and important subject, and will only make a remark in conclusion. It is the opinion of persons more conversant with these matters than myself, that under such legislative regulations as I propose, the occupiers of land would immediately find it their interest to leave no labourer without employ, and the powers given by law would seldom or never be called into *direct* operation. I must also state, that the plans which I have recommended for private adoption have been found by experience to be both easily practicable and singularly beneficial. In many instances they have been defeated by the selfishness and prejudices of individuals, but their value has not been the less evident. As to the *facts* stated, I am prepared to prove them by a host of witnesses.

I have the honour to remain, Sir,
Your faithful and obedient servant,
WILLOUGHBY D' ERESBY.

GRIMSTHORPE, November 15, 1844.

Note 1.—Suppose the number of labourers in a parish to be 120—viz., 40 whose labour is valued at 12s. weekly, 40 at 10s., and 40 at 8s. The 120 would require for a month's wages £240. And suppose (to make the calculation as simple as possible) the amount of rateable property in the parish to be £4800, excluding all occupations below £20, then the monthly rate would be 1s. in the pound. As an example, Mr. A. is assessed at £100, his monthly rate therefore is £5.

He has in his employment during a month,	£	s.	d.	£	s.	d.
one man at 12s., for two weeks........	1	4	0	5	0	0
Two men at 10s., for one week..........	1	0	0			
Three men at 8s., for two weeks	2	8	0	4	12	0
Remaining to be paid to the rate, or, in other words, to be expended in additional labour, by Mr. A...........				0	8	0

Note 2.—I wish to see in our emigration agricultural projects undertaken by a combination of different classes, on an extensive scale, and

with unity of design. Thus the capitalist and manufacturer at home—the one furnishing money, the other goods—would combine with the man of science and labourer upon the spot. At the end of such a term as would enable the lands to be brought into cultivation, a division would take place, adjusted upon a fair estimate of the contributions of all: thus, for example, the services of the labourer for a year might fairly be considered equivalent to a £50 share.

Note 3.—The occupation of three acres of pasture would give him that great necessary of life, a supply of milk for his family, which he can very rarely buy, and at the same time afford him a profitable investment for his money, and the purchase of a cow and sheep, which would produce him as many pounds yearly as he could get shillings in the savings' bank. It would consequently enable him to accumulate the capital necessary to stock a small farm. I cannot refrain from adding two very significant facts for the benefit of those who talk of the impossibility of the labourer purchasing a cow:—I have seen the plan of a parish of the date of 1717, in which every cottage had an allotment of pasture. At some subsequent periods all these were taken away, and let with the large farms. Ten years ago they were restored, and there are now in the parish 33 labourers who purchased cows for themselves as soon as the allotments were granted.

ON CHECKING INCENDIARISM.

At the last meeting of the Warwickshire Association for the Protection of Agriculture, a letter, by Mr. I. Maydwell, secretary to the Uxbridge Agricultural Society, on checking incendiarism, was read, but the suggestions generally were not considered practicable.

To my notion he appears to be wrong: he lays too much stress on the fact, that lucifer matches are readily obtained by persons of the humblest means; and he believes that this has "in some instances given birth to crime."

Now this conclusion seems so much opposed to reality, that I wonder how it could for a moment be seriously entertained. Did it never strike Mr. Maydwell, that if incendiarism be prevalent there must be some more important cause for it, than the mere cheapness of lucifers and "momentary impulse"? It would appear that he scarcely thinks so, from the restrictions he would impose on the venders of lucifers. He may be well satisfied, that if he could stop the sale entirely, he would on that account have no cessation or diminution of incendiarism; for when the individual has made up his mind to commit the crime, the means can readily be found to accomplish it; a common tinder-box and its accompaniments being almost as available for the purpose as lucifers; and where is the domicile, however humble, without the means for procuring light? He must, therefore, seek for the true causes, and administer proper measures to their sources. It has been shown that incendiarism has in some cases resulted from insult and needless tyranny to workmen; in others from scarcity of labour, and starvation in a land of plenty; and in some from a pure love of mischief. Other causes will in all likelihood be developed, if matters be investigated with calmness, and feeling, and rationality; and surely the question is of that importance to ensure these qualifications.

Hoping that proper views of the subject will be taken, and promptly, is the wish of

Your correspondent,

W. JACKSON.

Nov. 25, 1844.

AGRICULTURAL SUGGESTIONS.

SIR,

There was an error in the punctuation, or in some way I was made to say, in the letter you inserted for me in your last Quarterly, that I had experienced advantages from exhibitions; what I intended to say was, that the Royal English Agricultural Society had done so. I had in view the large sum they had made from admitting to the Southampton show of cattle and implements those who were not members of the association. The error, after all, may be a matter of no great moment; but I wish to call your attention to the circumstance, that the sum of £2550 should have been received in that way, which, I consider, is establishing a great fact; for it proves the very great interest generally taken in matters connected with agriculture; and it may be inferred, that it is a mighty means available for furthering British agriculture.

The Royal English Agricultural Association is undoubtedly an imposing institution, and the display that takes place in consequence, is what no other country in the world can produce; and doubtless the opportunity the society affords its members of viewing and comparing cattle from different districts of the country, examining implements on which much ingenuity has been exercised, and hearing speeches that bear on the subject in hand, after dinner, may be of use; yet I think something more may be done, and that a public agricultural museum and experimental farm are among the means for teaching the teeming inhabitants of Britain to make the best use of their father-land. If I give you some reasons for what I propose that I have before advanced, you will, I dare say, excuse me; but I think I shall be able to bring forward others for establishing an agricultural museum and experimental farm. First, good farming depends much on fixed machinery and operations, which cannot be shown by an annual and migratory society, but may be done by the aid of an experimental farm. Next, it would enable the Royal English Agricultural Association to confer privileges on its members which they have not now the power to do, by allowing them free admission to see the operations taking place on the experimental farm, besides conversing and consulting with the managers, some of whom necessarily would be men of experience and science. Next, it would give the London capitalist an opportunity of obtaining an insight into the practice of farming. Then, not least, it would afford advantages to the large landed proprietors of England, during their sojourn in London, to cultivate their taste and acquire knowledge in farming; and it may be observed, that it is of greater importance that one landlord should have clear views on the subject of farming than many farmers; for I think it will be found that the country owes much of the advancement of agriculture to landlords themselves. Agents, however well they may be informed, or disposed to improve agriculture, are necessarily like ministers of state—fearful innovators.

In anticipation that there will be an experimental farm and agricultural museum in the neighbourhood of London, I beg to propose for their development—

First, to ascertain the best method of making railroads, so that they shall be most conveniently moveable for the purpose of farmers; and whether the great landed proprietors should not have a stock of some miles of rails, for their own use and to lend their tenants. Seeing drifting and unprofitable sand and poaching clay at no great distance from each other, is, I think, a rational plea for the proposition.

Secondly, to ascertain the way by which the refuse from cattle can be most economically stored and used. That we import guano to an enormous extent, when it is notorious we are wasters of our national manure, is, I think, a sufficient plea for the second proposition.

Thirdly, to ascertain how far a wheel on the principle of the turnspit tread-wheel may be made available for thrashing, chaff-cutting, raising water, and other farming purposes. Seeing an account of a cotton mill being worked in Switzerland by a wheel of that kind, with the aid of a donkey or two, and thinking that power may be obtained in that way, is my plea for the last proposition.

In speaking of bush-harrowing, in my last letter to you, for the purpose of subduing the grass on the surface of land, I meant that the thorns should be put vertically between two boards, of at least one inch thick, and screwed tight, so that the whole would act like a broom, when drawn over the land.

I am, Sir, your obedient servant,
CADOGAN WILLIAMS.

BRIDGEND,
November 15, 1844.

ON THE NECESSITY OF ADOPTING A NEW SYSTEM OF FARMING.

SIR,

The spirits of the British farmers have been long excited and prompted by a hope held out to them, that success in their business would be greatly advanced by the assistance which the science of chemistry would confer, if judiciously introduced into their ordinary practice. This hope was founded on the well-known fact, that the food of plants is capable of being, in almost all cases, greatly concentrated; so that a bushel, either by weight or measure, might be made to go as far, in the way of enriching the soil, as a cart-load of unconcentrated manure.

Agreeably to this idea, many celebrated chemists have in behalf of farmers, not only analysed the cultivated plants, but also the various descriptions of arable soils on which the plants are commonly raised. Thus, we now have geological, botanical, and chemical agricultural information so copiously and incessantly supplied, that no farmer who may be unfortunate in his business can possibly ascribe his failure to ignorance of the philosophy of the calling.

Hence many artificial compounds have been invented, either in the condition of cake, or as powder, for the greater facility of distribution, either by hand, shovel, or machine—rape-cake, linseed-cake, greaves, desiccated night-soil, &c. As pulverulent dressings we have the far-fetched guano, bone-dust, and several compounds resembling guano, urate, &c. We are, moreover, referred to the practices of the Chinese and Belgian husbandmen, who are so careful of their night-soil and drainage from their cattle-sheds; which practices are laudable, as well as absolutely necessary in those countries, where little or no live stock is kept.

That no kind of husbandry can be carried on successfully without periodical dressings of some kind of manure is perfectly well known; and certainly the cheapest and most convenient to apply must be preferable. But manure has two properties which should always be considered by the cultivator. The first is its specific virtues, whence the greatest portion of pure vegetable food is derivable. The second is the consistent quality and durability of its parts, by which it has a mechanical effect in or upon the soil with which it is incorporated. The evolution of pure carbonic acid gas is said to be the principal product of the best manures; and to select and combine those substances which yield this nutritious gas most freely and liberally have been the aim of our chemical friends; and, of course, they have warmly recommended those artificial compounds above alluded to. These compounds have been extensively employed, and with various success; and one pretty sound conclusion has been come to concerning their merits as a dress for farm crops—namely, that they very visibly expedite the rising and progress of seedlings, and assist the crop for the first year, but here the effect of the application ceases. It has also been discovered that guano and other similar substances are more efficient for small seeds, such as turnip, clover, &c., than for larger seeds.

But an old farmer asks—cannot we make artificial guano for ourselves? What is it that they have that we have not? Do not the cleansings of our ponds, ditches, roads, stables, cow-houses, piggeries, poultry-houses, &c., contain every quality which these importers or manufacturers can possibly obtain? I have, continues the old farmer, but a very imperfect notion of those imponderable and invisible bodies which chemists tell us are the real food of plants; but I would humbly enquire—are not these gaseous elements all contained in our old-fashioned yard and fold-dung, our mines, mixens, and composts?

If these questions can be answered affirmatively, why should we send ships to the rocky shores of Africa and South America for those substances which we have in our power to manufacture at home? Because, if our ordinary manures contain the requisite nutritious principles, we have only to increase our usual stores to obtain what is proposed for us by our friends. But how this is to be done is the next question.

The answer is obvious—simply by keeping a competent number of the various kinds of live stock; and, in order to do so, securing a constant and ample supply of green and dry fodder for feeding and fattening live stock at home, and thereby *driving* off to Smithfield, rather than *carting* off to Mark Lane.

A farm, whatever may be its extent, is capable of being so managed that it may be appropriated to the production of corn or to the growth of fodder. In most modern farms a certain rotation of cropping is followed, and which rotation is that which experience has proved to be the most eligible and most profitable. Under such established circumstances the state of the farm, as to the proportion of grass and arable land, and the fixed rotation of arable crops, governs the amount of forage; and this amount, whether more or less, necessarily limits the number of live stock required for the prosecution of the business, and for the other and usual products of a farm. In former times the five-course system was very generally adopted. Green fodder crops were then but little known; and, of course, but a very limited head of live stock could be kept, and which barely sufficed to furnish dressing enough for the fallows happening in the rotation. At length this old system was abandoned, and the four-shift course of cropping was introduced. This change not only enabled the farmer to keep more live stock, but also to keep his land in better heart; the whole farm being dressed with muck every four years, instead, as before, in the course of five seasons. This improvement was attained by raising a green crop upon the fallow, instead of allowing it to lie barren for a whole season; hence more live stock could be kept, and, of course, more manure made, containing those precious gases which our chemical friends are so ardently recommending, or teaching us the names and value of.

But even under this four-course system of cropping there is never a useless redundance of home-made dress; and whatever the quantity may be, it occasions a good deal of labour for men and horses to lead it out upon the fields; and therefore to get rid of this labour, and to make up for any deficiency of the home-made store, foreign substances and a knowledge of chemistry are proposed as a panacea for the British farmer; whereas, if the improvement of the change from the five to the four-course system were duly considered, any thinking man would readily perceive that a still better rotation may be hit upon, which would at once increase the live stock, and consequently the amount of the best description of manure for every purpose of the farm, and this without any dependance on foreign aid, whether of ashes, soot, bones, rags, or other matters.

As an incentive to the discovery of a new system of cropping by which a full supply of home-made manure may be obtained, is the fact, that the present four-shift course begins to be less profitable than when first adopted, owing to the same crops following each other too frequently on the same field; and moreover, corn-farming is not so profitable now as heretofore, and therefore breaking through the now fashionable course cannot entail any loss, but, on the contrary, considerable gain in the shape of beef, mutton, veal, and pork.

Of what are called green agricultural crops, the invaluable turnip stands deservedly at the head; and besides the various sorts of this, all suitable for a farmer's purposes, it has several alliances which are excellent substitutes, namely, colza, rape, and cabbage, especially the largest white and red varieties. These, and all other plants (among which some, indeed many, of the grasses are inestimable) that can be consumed on the land where grown, is of the greatest advantage, and also an advantage if they can be dissevered and stored till wanted, as tubers and roots commonly are. Of these last there are several which are particularly useful to farmers, and which have not hitherto attracted that notice which their value for feeding and fattening live stock so eminently deserves. Of these I may mention mangel wurzel, potatoes, carrots, and especially parsnips, all of which may be cultivated on most farms with great success; and when to all these may be added tares, clover, Italian rye-grass, &c., no farmer need to fear overburdening himself with too much live stock when he has not sufficient keep for them, provided those different descriptions of artificial food have been previously and duly proportioned to the expected demand.

There is scarcely a farmer to be met with who can positively deny the practicability of such scheme of farming. But the objections are many. It is, say they, breaking the regular routine of farming. It requires a greater capital to be laid out in the purchase of stock. It introduces new kinds of vegetables and new modes of cultivation, and additional trouble in raising, storing, and preparing the roots for use. Our feeding-houses, both for oxen and sheep, must be enlarged. Store, boiling, and chaff-houses must be built, and furnished with the requisite machines and utensils; in short, it would be an expensive commencement of a new style of farming, which many of us would require some years to learn.

That such a system can only be introduced gradually is quite evident, and in the prosecution of it one maxim must be an invariable guide—namely, to have a *certain* prospect of full supplies of both dry and green food, before live stock be bought in to consume it. The man who buys his sheep and oxen before being quite certain that he shall have keep enough for them, is often obliged to sell at a disadvantage, or buy food yielding no profit. An abundant supply of food, therefore, must be the foundation on which all ulterior proceedings will depend for success. Hence, neither hay nor straw must be disposed of at market, and no grain except wheat and barley need be carried off the farm.

Stall-feeding will be a chief concern; for in almost all cases, if we except colza, tares, and turnips, though they are hardly an exception, it is better to bring the food to the trough or manger, than to drive the cattle to the field to help themselves; for in the latter case they destroy much of what they should eat, unless the land is very firm and dry. The crops on what is called *tender land* cannot well be eaten off, and therefore must be carted to dry ground, or to the feeding shed at once. The advantage of feeding crops on the ground is derived from the tail-dress which is left by the flock, and by which the labour of carrying off the crop, as well as bringing on an equivalent in dress, is avoided.

The commencement of this new scheme of making the most of the land must be upon the wheat stubbles, and as soon as the wheat is carried. If there be dress to spare, two or three acres should be got ready for winter tares, and a similar portion sown three weeks afterwards. A due share must be reserved for turnips; tankards to be eaten off early, and Swedes for the last consumption. But white Norfolks and globes should have the largest space, and be proportioned to the number of the flock intended to be folded thereon. Five score of full-mouthed sheep eat an acre of good turnips in a week; and which serves as a rule for apportioning the crop to the number of the flock, so that the turnips may not be consumed too soon.

While the ground is preparing for Swedes and mangel wurzel, other portions may be got ready by deep ploughing and dunging, for cabbage, parsnips, or carrots; and if the whole are drilled, the better. Cabbage are best sown in the garden in August, and transplanted in the field in April.

These are the new tacts and practices which keeping a numerous head of live stock would impose on the owner in order to make the stock profitable, and to have a superabundance of manure, which in a few years would so enrich the whole farm, as to render it capable of bearing the most luxuriant and remunerating crops. This appears to be the only way of advancing the agriculture of the kingdom; but the expense and trouble of the transition from the old beaten track to one requiring more care and vigilance delays its adoption. Nor, indeed, can it ever be expected to become general unless long leases are granted, to give enterprising men a rational prospect of regaining their outlay on changes of system, or on actual and permanent improvements. The cost in labour of draining, for instance, is intimately connected with all other schemes of improvement, and wherever this is necessary it cannot readily be executed by a tenant at will, or what is but little better, having a short lease. For permanent improvements the landlord is clearly chargeable, provided the work is done by his concurrence and with his approval.

The foregoing observations are intended to show how the British farmer may avail himself of the advice of chemists, and of amateur agriculturists, who seem to imagine that the homely business of farming may be greatly advanced by the application of a little philosophy, especially relative to manures; but it is quite clear, that without live stock to make sufficient dress at home, no amount of guano or other purchaseable substance will ever answer the purpose of the main-chance farmer.

The various methods of preparing trough and manger meat for either store or fattening cattle are of the greatest advantage. Bruised grain of almost all kinds; slicing and boiling roots; cutting both hay and straw into chaff, with which the other articles are mixed in various proportions, the whole being made palatable with a sprinkling of salt makes the mixtures go much farther, and certainly prove much more nourishing. Mouldy hay or straw may be made perfectly sweet and nutritious to cattle, by being sprinkled with water in which molasses has been dissolved, and by which lean cattle may be quickly fattened, especially if they are also allowed to drink the sweetened water. In short, there are many cheap substances which may be brought to vary, enrich, and increase the bill of fare of the feeding-house; and repeated trials have taught us, that cooking food for cattle is of the greatest importance as contributing to the success of the feeder. Even boiled cabbage or potatoes will fatten a pig, which, if given raw, only keep the animals alive.

I am, Sir, yours respectfully,

AN OLD FARMER.

November 15, 1844.

GURNEYISM; OR FIBROUS COVERING.

SIR,

The new and important results from the action of fibrous covering communicated to the members of the North and East Cornwall Experimental Clubs induce me again to call public attention to the subject. The fact of a remarkable increase of vegetation has now been fully confirmed by numerous and careful experiments. In every instance where the relative quantities of grass were cut and weighed, that operated on by this agency showed an increase of six to one over that of other parts of the fields without manure, and of five to one above that where guano, farm-yard manure, wood-ashes, or pigs'-house dung had been applied against it. The quantity of hay obtained from the grass was in the same ratio; the mean of the results from different farms, shows that a ton and a-half was obtained where gurneyism had been used, and only from four to five cwt. where it had not. In many cases the grass was so slight on the parts of the fields not covered that it could with difficulty be mowed, and in some cases was considered not worth cutting at all. The question of quantity is indeed settled. The next question, viz.—its comparative goodness, seems also determined. Mr. Gurney at former meetings gave it as his opinion that the quality was not inferior to that of other grass; this opinion, he said, was founded on botanical observation and careful chemical analysis; but he at the same time justly remarked that nothing positive could be known without experiment on cattle. In all cases, cattle eat this grass as readily as they do that of ordinary production, and appear to do as well on it. It has moreover been observed that the milk and cream of cows fed on it have both increased in quantity and improved in quality. Another very interesting and important fact has been recently developed, namely, that this action tends to improve the herbage by favouring the growth of the more valuable kinds of plants; in almost every instance it has very much increased the growth of the Dutch clover, &c. In Belgium, and many parts of the midland counties of England, it is the common practice, in order to destroy the couch-grass, &c., to manure twice on the green side with active compost; no doubt the result of this practice is to bring up the more valuable grasses, which, being delicate, require the assistance of art to insure their vigorous growth. The same results follow the action of fibrous covering, but in a more rapid manner, and certainly the quality of the herbage is improved. In many parts of fields where the action has been induced, a beautiful floor of grass now appears; while on those parts left uncovered, the grass is very inferior in appearance, having a considerable quantity of couch-grass and bent. There is no doubt therefore in practice that the quality of gurneÿized grass will be found equal if not superior to that of ordinary growth. A question of the greatest interest has naturally been raised, more particularly by landed proprietors, viz.—whether the soil is not exhausted by the prodigious crops of grass obtained by this action. On this point many were alarmed. My impression was, that if the crops were eaten off on the ground, the soil would rather be improved than otherwise: this opinion is founded on known data. Mr. Gurney is of opinion, that in all cases when animals are fed on vegetables, more nutritive matter is returned to the soil than is abstracted; indeed, there seems little doubt that the soil is improved, and this appears to be the general opinion of those who have watched its effects.

Mr. Gurney said distinctly, at the last East Cornwall meeting, that in the 30 acres which he had had under operation since last May, every field was improved, and that this was also the opinion of good land-surveyors; that in every case where sheep had been folded on the ground, the improved condition was now very striking. It was thought by several persons during the summer, that the action of fibrous covering was occasioned by retarding evaporation, and shading the soil during the unusually dry season. This, however, is not the case; the same proportional increase of vegetation has gone on since the wet weather set in, and still continues. Mr. Gurney stated at the last meeting that he has found fibrous covering, in a late experiment during the wet weather, had brought up the eaver and clover in a barley arish, in which "the seeds" had failed from the dry season. In closing this letter, I must again press upon the public generally the great importance of this subject, and call more particularly the attention of landed proprietors to the facts stated. Probably no one, without seeing the results of this extraordinary action, would give credit to mere statements. Let landed proprietors and agriculturists satisfy themselves by experiment. This may be considered a national question, and should be fully investigated by men of education and property, that it may be carried into general practice as quickly as possible.—Your obedient servant,

CHARLES KINGFORD VACY.

LAUNCESTON, Nov. 4, 1844.

THE ALLOTMENT QUESTION.

SIR,

The allotment system appears to be progressing very favourably; for although there has been much talking and writing about it, a great many allotments have been granted, and a good feeling has been created, which will be the means of many more being made. It is seldom the case, however, that a movement which involves the welfare of many human beings, can progress uninterruptedly: cankerous, wrong-headed meddlers will arise, raising every petty impediment they can command against improvement, which they endeavour to palliate by the shallowest of reasons. But of what disposition must he be, who would prefer seeing the labourer barely subsisting on scanty wages, or running a course which eventually lodges him in gaol, to that condition which an allotment of land invariably creates? Let us in charity hope it is not one that repines at the worldly happiness of humanity, and gloats over its sufferings, degradation, and wretchedness.

From whatever cause it arise, certain it is that the allotment project has encountered much opposition; but it has been of that kind which required no stretch of power to prostrate. No sound argument has been urged against it; no evidence of weight supports its opposers; and while it is pleasant to know that the great increase of friends renders opposition of less avail, undoubtedly it is a matter of regret, that a project so undeniably praiseworthy should meet with enemies. Their reasons, however, are not feared; but, if they were favourable to the system, some of them have the means to forward its progress to great extent; and this it is that makes it "a matter of regret."

Goldsmith says—and perhaps no passage has been oftener quoted—

> "There was a time, ere England's griefs began,
> When ev'ry rood of ground maintain'd its man."

But this I take as a poetic license; for England never did, and in all likelihood never will, see such a day. However, it is somewhat difficult to prophesy correctly what may be the changes in a nation. The rage at one time was all for large farms, and the small farms and allotments were so swallowed up; but time and the altered circumstances of the country having shown the fallacy of that arrangement, there is a return to a more rational system, and the small farmer and the labourer are again beginning to be considered worthy of notice. The welfare, however, of every class must be sought; and whatever the present feeling may be for bettering the condition of the labouring class, let us hope to see no infringement of the rights and privileges of others.

It should, however, be borne in mind, that even under the most favourable circumstances, the allotment system must have its bounds. The most distant approach to the universality that the above quoted lines record, ought not for a moment to be entertained; and if, in place of romance and fiction, sound sense be taken as a guide, steady perseverance will attain as much as can reasonably be expected. To attempt too much is often productive of corresponding disappointment; discouragement consequently follows, and perhaps, ultimately, a total abandonment of the object.

Various schemes have been proposed to better the condition of the labourer; none, however, appear to me so well calculated to effect that object, as the allotment of a small portion of land, in accordance with his means for the cultivation of it. Where allotments have been made, the changes wrought in the condition and character of the holders have, in all the cases which have come under my notice, been most satisfactory. The leisure time which was formerly consumed in sauntering about, or worse, is now turned to profitable account; and chill poverty, which freezes "the genial current of the soul," is no longer a fixture. The morals of the man have also been improved: before, having no cheering prospect of amending his condition, his heart sank, and he felt spiritless; he became indifferent and reckless; his feelings towards his employer and people in similar circumstances were anything but kind; his notions of honesty became exceedingly qualified; and he was by no means a safe neighbour. To a landowner who would reflect on this—who would consider his estate surrounded by men of this stamp—on whom no reliance could be placed, and when a cause for excitement did arise, in a position to become his bitterest enemies, such consideration must be fraught with dissatisfaction.

If an opposite state of things be desirable—and who can gainsay it—I hesitate not to say that the allotment system will, to a certain extent, produce it. By it a landowner will take proper measures to secure a continuance of

"A bold peasantry, their country's pride;"

and he will raise a bulwark round his demesne which, while he can rely on it in every emergency, will hand down his actions and his name to posterity, as one who, feeling and commiserating with a previously unfortunate race, generously rescued them from degradation, and once again made them feel they were men.

It requires no great stretch of fancy to picture a labourer in the degraded state—almost a destitute outcast—in the "sweetly breathing morn," pausing before a comfortable cottage and its teeming allotment; and who, while reviewing his past life—as Campbell beautifully expresses it—

> "Leans o'er the gate, and thinks the while,
> O, that for me some home like this would smile."

We may attempt to imagine the feelings of an individual in this position; but to describe them is a matter of impossibility. His memory would likely recall the time when the vigour of youth, sustained by the vivid pictures it is apt to draw, made him satisfied with his position, and in glancing forward to the future, dreaming not of the cold realities that await him. He might then, naturally enough, revert to his present demoralized and wretched condition, and in that sobered state of mind give vent to the anguish that oppressed him. He might say—"Had I but met with the like encouragement with which the tenant of this cottage has been favoured, I had continued an upright, honest member of society, and not the despicable object that I am." And are there not hundreds who may so think and act? It is not because a man is poor, that he shall invariably become criminal; yet no one can close his eyes to the fact, that too often it is the case.

But there are many noble-minded and generous landowners in Britain, in whom the best feelings of humanity are exerted to alleviate the sufferings of their unfortunate fellow-men; whose bright examples will stimulate others, who have thought little and felt less, to perform similar good deeds; and whose united efforts in the allotment of land will do more to abridge suffering, promote order, sobriety, honesty, and security in the rural districts, than any other proposition which has hitherto been made known.

The last account I have seen of the appropriation of land to this truly laudable use, is by the Duke of Manchester. His grace has granted 20 acres of his best grass-land, in the parish of Kimbolton, Huntingdonshire, which has been apportioned amongst 100 labourers. The means of obtaining required comforts have thus been conferred on one hundred families; and by this act his grace has created a host of humble friends, whose prayers and blessings will be feelingly poured out for the welfare of their benefactor.

Now there are few landowners in the country who could not allot some portion. What is there to fear—to cause them to stand aloof? If pecuniary considerations daunt them, they are but imaginary, as allotments pay quite as much rent as farms, only the collection of it may be attended with a little more trouble: but that could easily be managed by a proper arrangement.

Such, then, being the facts, the wonder will be if allotments do not increase. The fearful crime of incendiarism would then be somewhat checked, as many labourers, that are now prowling about with minds strongly impregnated with mischief would be reformed, and prove trusty guardians, where they are now, it is feared, but reckless destroyers.

I am, Sir, yours, &c.,

JOHN BRERETON.

November 16, 1844.

ON THE EXPEDIENCY OR INEXPEDIENCY OF LANDLORDS GRANTING AND OF TENANTS ACCEPTING LEASES.

By Mr. MAUGHAN, Agent to the Earl of Dudley's Trustees.

The monthly meeting of the Stewponey Farmer's Club was held at Stewponey, near Stourbridge, Worcester, on the 2nd December, Mr. J. Robins in the chair, when the following essay by Mr. Maughan, agent to the Earl of Dudley's trustees, was read:—

1. The subject appointed for consideration this afternoon is that of leases—that is to say, the expediency or the inexpediency of landlords granting and of tenants accepting leases. I shall refrain from any lengthened commentary upon the admitted importance of the subject, but shall proceed to state—

Firstly, the objections against leases usually urged by the opponents of farming leases; secondly, the arguments in favour of leases usually advanced by the advocates of farming leases; and, thirdly, the suggestions of my own mind upon the subject.

2. And, firstly, as to the objections against leases:—I find some of those objections brought together by an annotator on Tuke's Survey of the North Riding of Yorkshire. He observes, it is the popular fashion of the times to rail at tenancy from year to year—to assert that a country so held must be devoid of improvement—the tenantry oppressed—and the landowners deprived of that share of rent which they ought to receive were their lands let on what they call a more durable tenure. He observes that the permanency of tenure under lease is held to be one of the greatest inducements to cultivation; but he contends that, with tenants from year to year occupation is more durable than with the former—that the occupations of the latter are rarely changed, except for

faults where, under a long lease, there ought to be changes for the good of the neighbourhood and public, and where, so far as leases prevent such changes, they are evils. He alleges that few estates let to yearly tenants can be pointed out where the same families have not remained on them for many generations. He contends that where leases are common the greater part of the tenants are changed at the expiration of them, for, no mutual tie, either of friendship, honour, or attachment, existing between landlord and tenant, the former is bound only by interest to the latter, and that the latter presuming upon the certainty of his lease, gives, probably, some occasion of offence, which is not forgiven when it expires. It is contended, too, that in cases of tenancy from year to year rents are not so frequently advanced as on estates where leases are granted, and that both for permanency of occupation and moderation of rent tenancy from year to year is most in favour of the tenant, and that, for such moderation, the landlord has an ample return in the attachment and good offices of his tenantry.

3. Another objection made by the opponents of leases on behalf of the tenant is that, if by the lease a rent be reserved, fluctuating with the prices of produce—with corn, for instance—it bears hardest on the tenant when he is least able to discharge it. In bad and deficient seasons prices may rise from decreased production. In such seasons the tenant whose rent is regulated by the price of corn may have an increase of rent to pay with diminished means of paying it.

4. Another objection to leases exists, but it is one made on behalf of landlords, which is, that leases fairly granted on fixed money rents—I mean fairly granted with reference to circumstances existing at the time of the contract—often become, by a change of circumstances, altogether one sided, and in favour of the tenant; for, if the prices of produce advance, the landlord cannot share in the benefit, but if, on the other hand, prices fall, he is obliged to reduce the tenant's rent, to keep him (as the phrase goes) on his legs.

5. Now, as regards the arguments advanced in favour of leasing. It is said that no *prudent* tenant farmer will freely venture his money in the improvement of his land without security; that is to say, not an absolute certainty that the money expended will be returned to him, but certainty in the opportunity of conducting and of carrying out, in a series of years, that course of operations on which at the commencement his calculations were founded, and whereby alone he could hope to redeem his expenditure, with compensation for the time bestowed, the labour imparted, and the hazards incurred in the enterprize; and another argu-

ment in favour of leases is derived from experience of their benefits in many parts of the kingdom, where they have been *judiciously* adopted.

6. In connection with this subject it has been, and perhaps not unjustly, said, that in almost every field in the country there is an unworked, or an imperfectly worked, mine of agricultural wealth, but that it cannot be brought to light without an expenditure of money which, once sunk in the soil, can only be recovered in the course of years; and it is asked—Can the farmer who has his farm from year only, with justice to himself and his family, enter freely upon this outlay? He may do something, but how much less will it be than what he ought to do! Human prudence, family affections, and selfish care, will oppose many obstacles to the generality of men investing their property in speculations the proceeds of which they may never be permitted to reap. The ordinary confidence reposed in landlords, and in the agents of landlords, will not overcome those prudential considerations; the thought that his security is not real alarms the worldly prudence of the tenant, and banishes his ideas of permanent improvement or large outlays. This is a fact of which we may acquaint ourselves by an examination of our own sentiments and feelings. We may further convince ourselves by the evidence of our own eyes, and by the testimony borne on every hand, that under a system of tenancy from year to year the lands of this kingdom generally are cultivated most imperfectly, and that all improved systems of management are adopted slowly and reluctantly, the tenantry being cowed, as it were, by the reflection that it would be of no advantage to them to effect material improvements, as the rent would be expected to advance with the improving condition of the land. Tenants, in general, will hardly avow these sentiments, but their existence is not to be doubted. There is good and spirited management by yearly tenants here and there to be met with, but it is the exception, not the rule.

7. In examining the arguments of writers upon leases, I have nowhere found so much said, and so well said, in their behalf, as in an article by Mr. Hannam, of North Deighton, in Yorkshire. As I doubt whether it be possible to add much to his conceptions upon this subject, or to improve upon his manner of expressing them, I shall, with this willing acknowledgment, borrow freely from Mr. Hannam's paper. After expressing himself pretty much to the effect I have done, and after speaking of the disadvantages with which the tenant farmer often has to contend—fickle seasons, fluctuating markets, insolvent customers, and other evils—he proceeds to remark that greater than all those is the disadvantage arising from the uncertainty of the tenant being allowed

to continue unmolested in his occupation, after his money shall have been embarked in improvements requiring more than that average outlay which is necessary for ordinary and routine management. This uncertainty, he contends, represses exertion, and that the fact is beyond question, that where there is one tenant farmer, holding from year to year, who has the blind faith to employ his capital liberally, there are ten whose caution conquers the spirit of improvement altogether.

9. Mr. Hannam observes that upon this system of yearly tenancy there are other attendant evils; one is the facility which it affords to men without skill or capital to obtain farms; and another, the temptation it holds out to the needy man to make a temporary convenience of a farm. Hence, we continually see tenants with a capital of £500 upon a farm requiring £1000; for, as the occupier is a tenant from year to year, there is not generally that investigation into his qualifications which there ought to be, *and which there undoubtedly would be were a lease for a long term of years about to be granted;* and, on his side, the tenant is often impelled to take hold of an engagement, though not to his mind exactly, *as a convenience, and until he meets with something that suits him better.*

10. The result, he observes, of these contracts may easily be defined. If the farm be out of order at first, the tenant who takes it as a convenience (*i. e.*, on the determination to get all he can from it without much cost) soon finds that it will not bear robbery; but he finds out also that it will not do to expend money on it: he is, therefore, content to take what it gives, and to return to it, to give back to it, nothing; and he robs it, or it robs him, till after a time there is no more left to rob. In the other case, the tenant finds himself on a farm with a supply of cash below the demand, his farm requiring improving, but "it must be done bit by bit; he must see how it answers," are his cogitations; and, of course—as under this sort of management it grows worse—his land goes half-stocked, his crops fail, and he finds himself in difficulties before he knows how to turn himself; the capital he had is melted, and that without making any reform in the condition of his farm; and in a short time he is left penniless, and in the possession of a farm which, after such a course of negligent management, requires a capital double to what it ought to do. So much, then, for the evils of the system, which the advocates of leases would abolish; the advantages of the one they recommend may be stated to be the prevention of those very evils which the other produces. They would endeavour to raise up a class of men possessing *capital* to expend, and they would give them *confidence* to expend it.

11. It is not, however, as Mr. Hannam remarks, to be asserted that all tenants holding from year to year are bad managers; on the contrary, there are many, very many, first-rate farmers who are tenants merely from year to year. But then, as tenants, it may be said their lines have fallen in lucky places, or they would not risk the outlay generally necessary to superior management. And even in these cases we may rest sure that those tenants who do much without the security of leases, would do more, much more, if they possessed such security. They are, consequently, not such good farmers as they would be were they secure for a series of years, under the stipulations of a lease.

12. Another writer upon this subject has very well expressed himself in favour of granting leases. He says—"*All the great operations of the husbandman have a prospective result, as regards the profit to be derived.* The capital expended in such cases is only to be drawn back by periodical returns after the lapse of time. In the providing of extraneous manures, in the adoption of rotation of crops, which, to be effectual, must be extended through many seasons, in the draining of the land, and the like, time is necessary, both to effect the operations, *and to recover, with a future profit, the capital employed.* A landlord will scarcely fail to experience, that if there be not a sufficient possession accorded to the occupier, the necessary expenditure on the cultivation of the ground *will not be hazarded;* but more than this, a person of good capital will, like every trader, regard as a benefit the power of carrying on his business undisturbed, and will set a *pecuniary value on security and independence.*"

13. It will perhaps be urged that the farmer will, under a lease for 15 or 20 years, be too much affected by a depression of prices, unless his contract be a very advantageous one; and that, under such circumstances, he will not be able to procure any relief from his landlord.

14. Now it is certainly true the tenant will not be able to say, "You must reduce the rent of my farm, or I must leave it." There is, however, no reason to *assume* that this demand will be made, or that necessity will arise for making it. A contract which has to be in force for a length of time would be considerately made; it would be *based upon the prices of products for a number of years preceding the contract.* Fluctuations in the market would not materially derange the well-considered calculations of the lessee, the conditions of his agreement preparing him for the rise and fall. But there is another safeguard against bad times which the holder of a lease possesses. When he takes a farm in the manner detailed, he values the gross products of the same not at what

it will produce by his superior management, but at what it does produce *in its present condition.* If, therefore, he can, by superior skill, make it produce one-fourth more than it did formerly, his lease ensures the benefit of it, and encourages him to continue his improvements; and when a depression of the market takes place, if his produce does not fetch as much as it did once, he finds he has more in quantity, so that the aggregate value shows still in his favour; but, should brisk markets come, he has both good prices and an increased quantity of produce.

15. As regards the manner of reserving the rent upon leases for a term of years, say 15 or 20 years, I deem it too obvious to require to be argued, that the rent reserved ought not to be a fixed money payment, but should fluctuate with the fluctuations in the prices of produce—in most cases with those of grain; in some, with those of grain and cheese; in some, with the prices of other products, according to the nature of the farm and circumstances of the case. Thus, suppose a farm to be partly a corn farm and partly a dairy farm, it would be estimated to be worth a certain sum, on a certain assumption as to the prices of produce, say of wheat and of cheese. If the one or the other rose or fell below those pivot prices, the tenant's rent would vary accordingly. By this means the landlord and tenant are alike protected. But some will say that if this arrangement does good to the tenant at one time it does evil to him at another; for, since high prices are not only caused by *increased consumption*, but also by *decreased production*, when the price of grain rises, owing to a deficient yield, or to a bad harvest, *the farmer will have to pay an increased rent.* This may, in the opinion of some, be a weighty objection. But it really is not a weighty objection, when the subject is duly examined; for, if all the circumstances producing fluctuations in prices are considered, it will be found that the tenant holding under a lease, at a corn or other produce rent, will have three points out of four in his favour. I particularly invite attention to what Mr. Hannam so well says upon this branch of the subject—viz., that the tenant has three points out of four in his favour.

16. Take the case of a corn rent for the purpose of illustration:—First,—thus, if prices are low from a *limited demand*, he has a reduction in rent. Second—if prices are low from *increased production*, he has more grain, yet at the same time a *reduced rent.* Third—if, on the other hand, prices are high from an *increased demand*, he has a higher rent to pay, *but then he has more money to pay it with;* for, as the rent is but, say one-fifth of the produce, the owner only gets one-fifth of the

advance in price. Fourth—and it is only when the advance of price arises from *decreased production* that it operates against him. Then he has a higher rent without any advantage of market; for it is probable, that the advance of the value of his grain is more than counterbalanced by the diminution of the quantity.

17. But it should not be forgotten that this diminution in the quantity of his grain is not all "loss" to the farmer. His original rent is founded upon the presumption that his land will grow a certain quantity per acre; but this quantity is the average of a number of years, so that if in one year he *falls short* of the quantity, it is reasonable to suppose that in other years he *exceeds it.* When we consider, too, that he is, or ought to be, making improvements, it is fair to presume that he exceeds the estimated quantity upon which his rent was originally based, much more frequently and more largely than he falls short of it. I so much wish this part of the subject to be well understood, that I beg permission to repeat a part of what I have lately said.

Here Mr. Maughan repeated paragraph No. 16.

18. I believe I have now brought under consideration most of the arguments against leases, and most of those in favour of leases. I might, were I not unwilling unduly to lengthen my paper, add to the arguments in favour of leases (especially corn leases) the strong testimony borne in their favour by all who are acquainted with the farming of the southern counties of Scotland, of Northumberland, of Norfolk, and of other counties and districts of counties where the practice of granting leases has obtained. The evidence taken by the Committee of the House of Commons, appointed in 1836, to enquire into agricultural distress, affords much useful information on this head, and is very decisive in favour of leases, reserving corn rents, or other produce rents.

19. But whilst I intimate an opinion, that I believe the agriculture of England and Wales generally is much retarded by the practice of withholding leases, *or rather of not insisting upon their acceptance,* I wish it to be understood that I do not for a moment recommend an *indiscriminate* granting of leases to almost each and every occupier of a farm. I believe, in the case of small farms, leasing will never become general. The owners of small farms will feel that they can seldom enter safely into contracts for a long term of years with the class of tenants who compete for small farms. Their narrow means, their want of capital, render their consent of little, if any, value.

20. And, again, if upon many large estates the owners were suddenly

to require and to insist upon a change involving a spirited and enlightened system of farming, and were even at the same time to hold out to their tenantry the security of leases on corn or other produce rents, it would be utterly impossible in very numerous cases to carry out the patriotic and commendable objects of such landlords, with the great bulk of the tenantry existing upon such estates. An immense proportion of the soil of England and Wales is occupied by men of inadequate capital; another large proportion is held by men devoid of all energy and enterprise, and who are so prejudiced, and so wedded to their old antiquated ways, that they will hardly look over their own hedges to see what is being done by their more spirited neighbours, or, if they look at all, they look but to sneer at and to deride their operations.

21. I do, however, believe the latter class are diminishing in numbers. I wish I could say the same in respect of the former, but it will not materially diminish whilst a system of tenancy from year to year obtains; and Mr. Hannam has well expressed the reason for that in a passage I have already quoted, and which I beg again to quote.

Here Mr. Maughan repeated paragraphs Nos. 9 and 10.

22. There cannot be any doubt of the fact, that if it were the practice of an estate to insist upon the acceptance of leases, landlords or their agents would be constrained to sift the resources and circumstances of applicants much more closely than they do at present, when letting farms merely from year to year. The consideration weighs with the landlord or agent, that the contract is but for a year, and that if the tenant does not go on pretty well, he can be removed by a six months' notice; but we all know that such is the kindness, the generosity, and the forbearance of English landlords generally, that when once an indifferent tenant becomes seated in a farm he is generally allowed to remain there; he is tolerated and borne with, long after a proper regard either to the landlord's interests or to the public interests has suggested the reasonableness and the propriety of his being removed.

23. I have lately availed myself of an opportunity of witnessing the effect of leases for 21 years, granted in a somewhat indiscriminate manner, about 14 years ago, to a tenantry occupying an estate of some extent in Cheshire. The Beeston Castle and Peckforton estates, of about 4000 acres, at the period referred to, belonged to the late Sir Thomas Mostyn, as tenant for life, with remainder to a party whose pecuniary embarrassments gave grounds for apprehension that he would, if he came into possession, bear hard upon his tenantry. Sir Thomas, than whom

a better landlord, or kinder-hearted man, never lived, offered under the powers he possessed leases for 21 years to such of his tenants on those Cheshire estates as might choose to apply for them, and his agent might deem fit to be entrusted with them. Thirteen of the principal tenants on those estates asked for, and obtained, leases; the only test of fitness applied to the applicants being their having paid up their rents.

24. The leases have been granted about 14 years. I went over the estate in September last with my relative and namesake, who has been familiar with every corner of the property for 30 years, and who settled the terms of the leases 15 years ago, and which were very well and equitably arranged. The farms in question being dairy farms, the rents were made to fluctuate with the price of cheese. From the testimony of my relative, and that of some intelligent parties who accompanied us, and from my own recollection of the property, I can state, that only two individuals out of the whole number of 13 have made any the least use of the security and advantages afforded them by their leases. As to 11 out of the 13, they and their land have remained alike, as it were, *in statu quo;* and the idea of improvement never for one moment appears to have entered into the minds of the parties. Some of those men, the greatest part of them, had not the necessary means of effecting material improvements; they were needy men: but some few were in better circumstances, and better results might have been expected. There were, however, two individuals, whom I may hope without offence to name, who had the calculation and good sense to set to work at once to put their land into condition. The names of those tenants are Mr. Bird of Beeston Hall, and Mr. Jones of Park Gate, a farm near Beeston Castle, both near Tarporley. Their process of improvement consisted in draining and in dressing heavily with bones. They drained extensively, and they manured with bones at an expense altogether of from £10 to £12 per acre.

25. Mr. Bird's leasehold consists of two farms, one of about 330 acres, the other of about 84 acres. I heard Mr. Bird affirm that such was the change produced by management upon the farm of 84 acres (where he, when he was first married, was by his late father placed to live), on nearly the whole of which he expended £10 per acre at the commencement of his term, that where his predecessor made about 25 or 30 cwt. of cheese per annum, he (Mr. Bird) made upwards of 4 tons, and maintained besides as much stock in horses and young cattle unproductive of milk, as had been before maintained. Other portions of Mr. Bird's land besides the 84 acres farm have been much improved, and he

has been repaid, and is being repaid, in a degree that is satisfactory to him, and to which his good management and industry entitle him.

26. The case of Mr. Jones is scarcely less striking. His farm is about 200 acres. He adopted a course of treatment similar to that of Mr. Bird. It is known to all his neighbours, and I heard him admit it, that before he drained and boned, he kept only 23 cows. His land now maintains 46, exactly double, and such of his lands as were in tillage before are in tillage still, and partake of the good management bestowed upon his grass lands. I consider the case of those Cheshire estates very interesting, in connection with the subject of leases, and I give the names and addresses of Mr. Bird and Mr. Jones, that those who take any interest in the matter may, if they please, take occasion to see them and their farms.

27. Mr. Tollemache, one of the members for South Cheshire, has lately become, by purchase, the owner of the Beeston and Peckforton estates. They adjoin a fine estate of which he was previously possessed, and the whole united constitute a very noble possession, and worthy the stately castle which Mr. Tollemache has in progress of erection on part of the Peckforton Hills. The site is admirably chosen, the scenery from it very beautiful, and the whole is worth turning aside to see.

28. I have said I consider the case of the Beeston and Peckforton leases interesting. I say so because it proves how important in a national as well as individual point of view would be the effect of granting leases *to well-selected tenants*, and how absolutely necessary it would be under a system of leasing to constrain the drones, and the incapables, to move on, or to remove out of the way. If individuals who advocate leases imagine that material advantage would ensue from the granting of leases to tenants indiscriminately, those individuals labour under great mistake. There must be a great disturbance of the present occupiers, a great severing of old connections, and a great uprooting of old attachments, if the system of leasing is to be suddenly attempted with a view to national and to individual benefit. Landlords cannot, with common prudence, demise their estates for a long term of years, and accept the covenants of parties who have nothing to lose, and who, if they had leases to-morrow, would not be able to turn them to any the least advantage.

29. In the subjects to be considered this afternoon, it is suggested that the lecturer should offer an opinion as to the number of years a lease should be granted. I think in cases where much improvement is to be made, our English term of 21 years, or the Scotch term of 19

years, very fair. If a farm when leased be in good condition, there is less necessity for extraordinary outlay, and consequently less necessity for the security of a lease which extraordinary outlay requires. In many cases, however, where outlay is to be made by the tenant, a lease for 7 years certain, and afterwards from year to year, unless and until a two years' notice to quit be given, would afford perfect security to the tenant, and would be conceded by the generality of landlords with less hesitation than a term of 19 or 21 years. I think, whatever the term may be, in the event of the death of the lessee, the lessor should, in addition to his ordinary powers of re-entry, for breach of covenant, have power to determine the tenancy before the expiration of the term by a two years' notice to quit. Inasmuch as leases may generally be supposed to be granted on the estimate of the lessee's capital and personal fitness, it is hard that the lessor should be constrained to bear with a successor in the tenancy who may be in all respects the opposite of the original tenant. The two years would afford time and opportunity to test the qualifications of the party introduced into the tenancy. If his management were good, public opinion, if the right feeling of an English gentleman were wanting in the landlord, would generally secure the tenant against unfair disturbance or molestation. I think such a power to determine farming leases as the one I have suggested ought to be reserved to lessors, and I think it is one with which English landlords may safely be entrusted. At all events, such a reservation of power to the landlord, might be made perfectly unobjectionable, by the stipulation that, in the event of its being exercised, the tenant should be paid for all permanent improvements made with the acquiescence of the landlord or agent, and of which improvements the tenant had not had time to reap the full benefit.

30. As far as my experience of estate management and of farming leases goes, I should say that there is hardly any system of letting worse than that of leasing upon lives. I have had an intimate acquaintance with some extensive estates (particularly in South Wales) which had been demised for three lives at low rents, a consideration in money having been paid for the leases when granted. I first knew them at the period when the leases were beginning to drop in. The farming was in almost every case the very worst in the country, and although the rents were only one-fourth or one-third of the rack-rent value, most of tenants had been reduced to beggary by their indolence and bad management. It seemed as if towards the expiration of their leases—when their leases hung upon one or two old lives for instance—it seemed as

if the uncertainty of their tenures had paralyzed all their exertions. They would not improve, considering the time was near at hand when the lease must expire and an advance in rent ensue.

31. Much has been said by the opponents of leases respecting the mutual feelings of regard, and the interchanges of good offices promoted by yearly and dependant holdings; but in my opinion, leases for a moderate term of years have not any inherent or necessary tendency to extinguish such feelings and offices. Proprietors of estates may be apprehensive that if leases were granted to their tenants generally, they, the proprietors, would lose some of that control and influence on the occasion of political contests which they possess under a system of tenancy from year to year. My own impression is that, even under a system of leasing, tenants generally would be found ranged on the side of their landlords. It happens continually in local political contests that there is nothing deserving the name of principle involved, certainly nothing in which the tenants' interests are materially involved, the struggle being for men rather than measures, and the issue of the contest being to the tenant, as well to the bulk of the community, a matter totally unimportant. A tenant, whether under a lease or yearly tenancy, would be departing from those ordinary principles of prudence and motives of self-interest by which the generality of mankind are actuated, were he to refuse his support to the landlord generally in political and other public struggles. A leasehold tenant would generally reflect upon the rankling effect upon the mind which his opposition to his landlord would be sure to produce, and how little it would be calculated to recommend his application for modifications of any subsisting contract, or for renewal of his lease, or to dispose his landlord to press lightly the enforcement of covenants on the expiration of the term. He would reflect that support cheerfully and gracefully accorded, though not recompensed, nor, perhaps, very pointedly acknowledged at the moment, is not always on that account unobserved or unappreciated. These remarks are founded not merely upon observation of human nature, and the course of men's conduct and reflection upon the motives by which mankind in general are actuated, but upon what I may term experience of the working of the system of leases; for, so far as I have had opportunities of observing upon this branch of the subject, I believe I may say the instances are very rare in districts where leases obtain of tenants being seen in unseemly opposition to their landlords. I do not think public liberty, or the public interests suffer on that account. Whig landowners, of course, expect their tenantry to stand by them, and Tory

landowners do not expect any more or less of them, and so the account is fairly balanced.

32. Among the topics suggested for consideration in this lecture is that of the *customs of tenancy*. It has not occurred to my mind how that topic could be conveniently and fully gone into in connection with that of leasing. Moreover, the subject of the *customs of tenancy* appearing to me to be in itself sufficiently extensive for a separate lecture, I have abstained from going into it at all.

33. A suggestion is also made respecting the *facility of borrowing capital*. Now, as bankers and others are in the habit of affording accommodation to many farmers, though tenants merely from year to year, they would not be less inclined to extend accommodation to tenants holding, perchance, under beneficial leases, and who might have the means of depositing, or otherwise mortgaging, such leases. The lease, if assignable, would, of course, be a consideration, sometimes a valuable one, thrown into the scale with such other considerations, personal or otherwise, as the tenant might have to offer. It is not to be doubted that a system of leasing would extend the opportunities and increase the facilities of the tenant farmers of England for obtaining pecuniary accommodation.

34. Another topic is suggested also to which I will briefly advert, that of the rate of interest, the per centage to be charged on money invested by landlords in improvements on farms already let at fair and equitable rents.

35. How often do we see gentlemen, in their desire for extended landed possessions, who, whilst they already have lands almost totally unimproved, imperfectly drained, imperfectly fenced, with bad roads and worse buildings, lands on which capital may be made sufficiently remunerative, how often do we see them borrowing money at four or five per cent to pay for estates bought to pay two or three per cent! I submit it is very obvious that, instead of indulging the passion referred to, it would be better for the interests of agriculture, and certainly, *in a pecuniary point of view*, much better for such purchasers and their families, were they to expend capital on such of their lands as allowed of permanent improvement, although that improvement might not be calculated to admit of the tenant bearing an increase of rent to a greater extent than five per cent on the outlay. The tenant farmer, however, must obviously lay his account for a better rate of interest; for, in addition to the interest of his money expended in permanent improvements, *he has his capital to redeem*. If holding under a lease, it will

depend upon the term remaining in such lease; if holding under a tenancy from year to year, it will depend upon the confidence he may have in the honour and fairness of his landlord how he ought to lay his calculations for redemption of outlay.

36. In connection with our present subject it may be remarked that where a tenant is highly rented, and somewhat crippled in his circumstances by the drain thereby occasioned, a landlord, instead of reducing the rent, may often, by a little judicious expenditure in promoting, or altogether executing, an improvement, sustain the rent, and confer a greater boon on the tenant than a reduction of rent would have conferred. It is always matter for the exercise of judgment and discretion, whether the landlord should charge any per centage at all upon an outlay made under such circumstances.

37. I shall now bring my observations to a close, merely observing, what has often been before observed, that it is impossible to travel through England and Wales in any direction without feeling a strong conviction that there must be some serious obstacles to the investment of capital in agriculture. The people at large, however, are deeply affected by every measure which has a tendency to fetter the productive powers of the soil, and, at the same time, to depress one of the largest and most valuable classes in the country. It is clearly their interest that corn and other provisions shall be supplied in abundance; and, perhaps, the people of England and Wales may justly complain of the want of leases as one of the principal causes which check the improvement of their own territory.

At the conclusion, it was proposed by Lord Lyttleton, seconded by J. H. H. Foley, Esq., and carried, "That the thanks of this meeting be given to Mr. Maughan for his very valuable essay."

Both Lord Lyttleton and Mr. Foley, in speeches of considerable length, expressed their concurrence in the views on leasing, enbodied in Mr. Maughan's lecture, and avowed their readiness to act upon them.

An animated conversation on the subject then took place, and it was proposed by the Rev. G. Wharton, seconded by Mr. Parish, and carried unanimously:—

"That it is the opinion of this meeting that the present system of letting farms—large farms especially—to tenants to hold from year to year, begets, on the one hand, incaution in the landlords in the selection of tenants as regards their pecuniary resources and personal fitness; and, on the other hand, affords mischievous facilities to men without calculation and competency for obtaining farms exceeding their skill and capital to manage, and begets in tenants generally holding from year to year an indisposition to hazard any outlay not required by ordinary and routine management; and that it is further the opinion of this meeting, that the granting of farming leases for a term of 21 years, or thereabouts, on corn or other produce rents, to tenants carefully and judiciously selected, would tend, in an eminent degree, to elevate the pursuit of agriculture, and would incite to the general adoption of the best systems of husbandry."

After passing this resolution the company broke up, after one of the most interesting meetings that has hitherto taken place.

M. VON THAER AND HIS WORKS ON AGRICULTURE.

By CUTHBERT W. JOHNSON, Esq., F.R.S.

By those enterprising English farmers who are so earnestly and so successfully striving to improve the fertility of their lands, the labours of Von Thaer, with the same noble object, cannot but be regarded with considerable interest. It is at all times refreshing to trace the gradual advance of any art, of any science, from its rudest—to its advanced state. The evidence which such results of experience afford, should cheer and stimulate even the most phlegmatic cultivator; since such facts disprove so practically, and so completely, the too common conclusions of those who know the least of agriculture, that it is a mere empirical, stand-still kind of pursuit, in which the ploughman may readily farm his land, even better than the equally practical and accomplished farmer. The steady advance which has been long making in farming can, indeed, hardly be too often considered by the cultivators of my country. It is a happy result, which has been experienced ever since science began to dawn upon agriculture, when men of other professions, learned in other sciences, first endeavoured to assist the labours of the husbandman. This remark is not to be confined to the tillers of the merry land of England; it well applies to that of Northern Germany, the native country of the subject of this paper. In briefly following Von Thaer through this, his chief agricultural work, I shall repeat and enlarge upon what I have, in another valuable publication, some time since had occasion to remark (*Farm. Mag.* v. 20, p. 572).

"Von Thaer was a native of Hanover, being born at Zell, on the 14th May, 1752. In his youth he studied medicine, practised as a physician, and obtained the honour of being appointed physician to the king. His health having been impaired, he retired from his profession, dedicated his time to the study of agriculture, and signalized himself by the publication of a work, entitled, "*Introduction to English Agriculture,*" and by the translation of several valuable agricultural works into his native language. In the year 1804 the king of Prussia, well knowing his skill in agriculture, invited him to settle in his dominions, and gave him the estate of Mögelin, to manage as a pattern farm. This was situated about 45 miles from Berlin, consisting of 1200 acres. He, at this soon celebrated establishment, erected extensive buildings for himself, three professors, a variety of tradesmen, and the requisite agricultural buildings. The three professors are—one for mathematics, chemistry, and geology; one for veterinary knowledge; and a third for botany and entomology. An experienced agriculturist is also engaged, whose office it is to point out to the pupils the mode of applying the sciences to the practical business of husbandry. Von Thaer here composed his great and elaborate work, which has been recently translated, and published in two volumes, by Mr. Shaw and the author of this paper, entitled, '*Principles of Agriculture,*' containing the result of his experience through a series of years.

"The agriculture of a district so extensive as that of Germany, naturally varies with the nature of the climate and the degree of knowledge possessed by the inhabitants of the numerous and extensive provinces of which the empire is composed. In the Mecklenburgs, or that portion of Germany bounded by the Baltic on the north, according to Mr. J. S. Carr, 'from north to south there is a ridge of elevated sandy land (the same which may be traced from the Bannat in Hungary to Jutland in Denmark), varying from 10 to 20 miles in breadth, affording miserable crops of corn, and worse pasture; but the soil improves on both sides towards the Elbe and the Baltic, where fine districts of rich loams and clays are managed with considerable plodding industry.'

"The farms in Northern Germany vary in size from 50 to 60 acres, cultivated by peasants, to 300, and even 2000, in the hands of the farmers and proprietors. The number of cows kept by farmers is often 300 or 400; and they are sensibly alive to the advantages of sheltering stock in winter. Their sheep-houses are commonly made large enough to hold 5000 head. They usually harvest all their corn in barns. Their agricultural implements are defective; for instance, they use generally, instead of a plough, an instrument called a *haken*, which is exactly similar to one used by the Roman farmers. Their harrows have commonly wooden teeth, and are worked with five horses, in a very bungling manner. They often break up their pastures with this clumsy instrument in summer, in order to expose the soil more effectually to the frosts of the following winter, spread over it their dung, and in the following July sow broadcast rape-seed; this they dress with 100 lbs. per acre of gypsum-dust in the following spring, and in July the seed is ripe, which is then trodden out by horses on large canvas sheets in the field. 'The oil of this seed, when purified, is without smell, gives a brilliant, clear-burning flame, and is universally used all over Germany, in the saloon and the cottage.' If this crop escapes the manifold contingencies of slugs, caterpillars, turnip-fly, and beetles, it is a very remunerative crop, worth from £10 to £20 per acre. The improved rotations now commonly followed in northern Germany are—1. Fallow well dunged. 2. Rape. 3. Wheat. 4. Barley. 5. (with light dunging) Peas. 6. Rye. 7. Oats, sown down with rye, or timothy grass and red rover; 'which, a well as the peas, is gypsumed with great effect before the dew has left the plant on a May morning.' The clover, after being twice mown, is left two years longer for pasture. Marl, at the rate of 164 feet per acre, is much used, and is the beginning in many places of all improvements. The *haken* is worked by oxen. The Merino breed of sheep is now extensively cultivated in the Mecklenburg, and in Saxony. There is cattle otherwise noticeable in their live stock. The farm servants are commonly lodged and fed in the house, and are paid from £5 to £6 per annum. The married labourers have a free house and firing, a cow kept, and about one rood of garden, and twice as much potato land. The average rent of wheat and barley land is about 18s. per acre. Manures of all kinds are preserved with much care; and they show a wisdom in the collection of night soil, and that of the sewerage of their towns, which it would be well to imitate in England.

"Such is the agriculture of northern Germany; a practice which the work of M. Von Thaer was written, and with some of the happiest results, to improve. In this great work he laboured with an industry and a zeal which seemed never to tire or become exhausted, to improve the cultivation of his country, to banish old and erroneous practices, to elevate the character of its farmers, and to increase their profits in every possible way. Von Thaer very justly perceived that in no way could these objects be so safely, so quietly, and so certainly accomplished, as by the formation of agricultural schools and model farms; for, as he truly enough told the German farmers, in his celebrated work—

"'With equal instruction and equal talent, that person will always have the superiority, whose education, good in other respects, has been directed towards agriculture from its early youth. A young man, fifteen years of age, will best obtain the requisite education in an establishment which unites considerable activity in the different branches with the employment of the various means of obtaining the produce of the earth, although this establishment may not have attained the perfection of which it is susceptible. There the pupil will have all the objects and operations of agriculture brought under the cognizance of his senses: he will acquire a practical knowledge of all the details; he will learn to select the proper season for each operation; he will form in his own mind a kind of intellectual admeasurement of the nature and value of soils, the seasons, and of the requisite labour. He will also there be taught all that has relation to the general management and direction of business, and he will carefully observe the manner in which it is conducted as often as opportunity permits. Lastly, he will not fail to acquire as much as possible, a certain tact in buying and selling.'

"During more than a century the possibility and advantage of a scientific education for the practice of agriculture has been maintained, and an agricultural chair has been established in almost every university. In so far as it is the duty of these institutions to afford the public functionary, the lawyer, and even the theologian and the medical man, a clear idea of agricultural practice and its importance, I admit the utility of these appointments, and only desire that the instruction shall be directed to the sole end which it can possibly attain.

"These professorships, however, do not appear to me necessary or even useful to the agriculturists who seek instruction there, because the nature of the life which is led there, and the usages of the university, and the general tendency of affairs in such places, seem to possess something altogether foreign to his habits and pursuits, and are calculated to unfit him for the peculiar species of activity, and the peculiar kind of life to which he is destined. Besides, it is scarcely to be expected that an agriculturist who unites practice with science will accept a professorship of this kind at a university; and he who does not possess both these requisites is by no means fitted for such a situation.

"Nothing can contribute more to the acquisition of an enlightened knowledge of agriculture than travelling in those countries which are distinguished for the perfection of their agriculture. The contemplation of practices and institutions so various among different people, destroys that prejudice encouraged from our childhood, which leads us to believe that nothing can be done in a better or in a different manner from our own mode of performance. The customs of different provinces and of entire nations, as well in the general proceedings of agriculture as in the performance of individual operations, are, with every thinking man, so many experiments on a grand scale, if he knows how to place them on a level with each other, and to compare their results. But it requires a great deal of perseverance, and the surmounting of many difficulties, to derive real advantage from such travels, and to extend the observation to the actual and true principles of things. They who have only run through a country as it were by post, and who stop only at the inns, will report very little that can be in any way useful. Besides, there would be required a correct judgment and penetration founded on preliminary and long-continued study, and an impartiality altogether free from prejudice, in order to derive true and positive results from the observations which are made. Without such acquirements, so far from being divested of our preconceived notions, we shall only bring back others still less suited to our climate, and the circumstances in which we are placed."

Von Thaer saw the importance to the farmer of a knowledge of the chemical principles of vegetation—he treats therefore at length upon the food of plants, and says in the course of that description—

"The principle article which contributes most to the formation of the plants which we cultivate, which causes them to grow and to bear the seed which is destined for their reproduction, is manure, or the mould produced by its decomposition. The quantity and quality of the plants which we propogate depends, therefore, on the quantity and richness of the manure which we can afford them. Next, then, to labour and the manner of superintending its execution, the subjects which most naturally present themselves to our consideration are, the nature of manures, the means of obtaining them, and the proportion between the quantity of the manure and that of the produce.

"Attempts have been made to supply the place of manure by an increase of labour, or to supply the place of labour by an additional quantity of manure, but the success of these experiments has necessarily been merely apparent at first, and but of short duration. Jethro Tull imagined that he could altogether dispense with manure and replace it by the application of frequently repeated tillage applied to his crops, sown in rows, and by the complete division of the parts of the soil produced by that means. The plan, at first, turned out favourably for himself and his followers, for they had a fertile soil to work upon, which had for a long time previously been plentifully supplied with manure; in fact, by repeated tillage and the consequent exposure of the soil to the action of the air, all the nutritive particles contained in it were converted into extractive matter fit for the food of plants, and thus brought into the service of the roots and their fibres. But this effect can only last for a few years; and wherever this system of drawing upon the riches of the soil is closely followed, it will eventually render it so poor, that plentiful and repeated manurings will scarcely be able to restore it to anything like fertility."

Von Thaer endeavoured, by every argument in his power, to convince the farmers of the advantage to be derived from the use of green crops, or "by what is called repose, or inactivity *(repos)*, or, rather, by the conversion of the fields into pasture grounds. The putrefaction of the herbage which grows spontaneously, of the worms and insects that lodge in it, and the excrements of the cattle which pasture on it, communicate to the soil a nutritive power, which is greater or less in proportion to the state of the land when it was left to nature, to the abundance and vigour of the vegetation, and to the quantity of excrements voided by the cattle.*

"This advantage," he adds, "may be fixed according to an inverse proportion of the extent necessary for the whole maintenance of a cow.

	Degrees.
"If 3½ acres be sufficient, this amelioration may be considered as equal to	10
3 —	11
2⅔ —	12
2⅓ —	13
2 —	14
On the other hand, if 3½ acres are required for a cow, the amelioration can only be considered as equal to	8
4 —	6
4⅓ —	4

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* "The crops of the farmer, if used in their green or unripe state, exhaust the soil which produced them in a much less degree than the same crops when suffered to ripen their seed; for their saline, and other matters, increase in proportion as the plants attain maturity. Now, the ameliorating grass lands to which our excellent author alludes are those fed incessantly by the live stock of the farm; the produce consumed green; the soil constantly enriched by the excrements of the cattle by which they are deposited."

"Or according to the state of fertility in which the soil was allowed to grow herbage.

		Degrees.
"If the soil contained	40 degrees of fertility, then it annually gains	10
—	50	11
—	60	12
—	70	13
—	80	14
—	90	15
If, on the contrary,	it only contained 30 degrees of fertility—	
—	30	8
—	20	6
—	10	4

"The additional fertility which is produced by clover, varies according to the closeness of the crop, and the length of shoot which the plants are suffered to attain before they are buried by ploughing; and this latter circumstance has a very material influence on the improvement produced by clover. In fact, it is evident that when this plant is thick, and averages from eight to nine inches in height, it yields a very considerable proportion of vegetable manure to the soil; but the thicker the clover the greater will be this advantage, because then one ploughing will be sufficient. It may be laid down as a general principle, that clover sown on land containing 60 degrees of fertility, will improve it by 10 degrees."

It is evident from the remarks he found it necessary to make, that the German farmers of the days of Von Thaer were much behind the rest of the world in the management of manure; he told them much that was true, when he said—

"Cattle can only be considered as machines that appropriate a very small portion of the fodder which they consume to their own subsistence, while they reduce the greatest portion of it to dung. By dung, we understand not only the larger excrements properly so called, but also the urine, and perhaps some portion of the transpiration which is absorbed by the straw; this dung is not entirely composed of the residue of the fodder, but also contains some portions of the animal organization, which, in the couse of nature, are detached, evacuated, and replaced by new formations. Thus the dung loses a great part of its vegetable nature, and acquires animal properties instead.

"No average proportion can be given of the quantity of manure which cattle will produce, because when they receive an abundance of food containing a great proportion of succulent matters, the manure they will yield, both in straw and litter, and in excrement, will be seven or eight times as much as would be furnished if they were fed on dry food. In the former case, it is scarcely possible to give the cattle a sufficiency of litter; the dung ought to be carried out every day, or at least to be thrown back, otherwise the animals would stand in dirt and filth; in the latter case, on the contrary, straw which has formed the litter for a month or more, will be found to be scarcely soiled or wetted. The size of the cattle has some influence on the quantity of manure derived from them.

"A horse fed for the most part on corn, will yield almost if not quite, as much dung as one that consumes twice that weight of hay only. This is one reason that the nutritious properties and powers, as well as the weight of dry fodder, should be regarded; because what is wanting in quantity, when the animals are fed on substantial fodder, is, doubtless, made up by the quality of the dung, and by the greater number of animal particles which it contains.

"In a paper by a very talented agriculturist, and a man of some experience, in the 'Annales de l'Agriculture de Basse Saxe,' année 5, section 1, page 129, the following statement of the proportion of the quantity of manure furnished by different animals will be found—

"If the dung of an ox or cow amounts to	180
That of a horse amounts to	170
That of a sheep to	10
And that of a pig to	18

"The manure produced in his undertaking during the space of three years was distributed according to this proportion, and he found that each

"Ox or cow had produced	7·789	loads for a wagon	drawn by four horses.
Horse	7·357	"	"
Sheep	0·432	"	"
Pig	0·778	"	"

"These wagons, from the manner in which they were loaded, probably contained from 22 to 24 cwts. each.

"We have not, as yet, had any sufficient or definite proofs of the quantity of dung produced by most of the vegetables given as food; the only experiments from which clear and certain results were deduced are those which have been made on potatoes. It would appear, from the average of those results, that 100 lbs. of potatoes will produce 60 lbs. of dung; and that thus, an acre of potatoes which yields 80 bushels, or 8000 lbs. above the seed, and is equal to 4000 lbs. of hay, will produce 4800 lbs. of dung, without reckoning that produced by the haulm, which amounts to 1512 lbs., on account of the weight being doubled of that portion, when reduced to a state of dryness. It will weigh this amount whether it be given to the cattle as food while green, or dried, and used as litter instead of straw. Therefore, by uniting these two sums, we shall find the average amount of dung produced by an acre of potatoes to be 6312 lbs.

“As experience has not hitherto furnished us with any data from which we can derive any positive information with regard to the other plants used for fodder, we will suppose their produce in dung to be equal to that of potatoes, calculated not according to weight, but according to the number of acres, without allowing anything for the additional quantity of nutritive matter their extra amount of produce may contain. We shall, likewise, suppose clover and lucerne to be the same in this respect as natural hay, notwithstanding the superiority which they possess over the latter in point of actual nutriment.

“We shall, therefore, reckon that—

	Lbs. of Dung.
“ One acre of potatoes, or any other vegetable or root, will yield..	6312
〃 clover, in two mowings	5200
〃 clover, in one mowing	3200
〃 lucerne	8800
〃 saintfoin	4400
〃 vetches, manured	4400
〃 ditto, not manured	2600

Independent of the additional weight which the straw will produce.

	Lbs. of Roots per acre.
“ Beet root yielded	20,000
Ruta baga and turnip cabbage	20,000
Carrots	18,000
Cabbages, if sown on a soil suited to them	36,000

	Lbs. of Hay.
“ Thus, then, the produce of an acre of potatoes may be regarded as equal in nutritive power to	4000
That of an acre of beet root as equal to	4347 or 4300
〃 ruta bagas	5700
〃 radishes	3800
〃 carrots	6700
〃 cabbages	6000
〃 clover, at two mowings	2600
〃 lucerne	4400
〃 saintfoin	2300
〃 vetches, when manured	2200
〃 ditto, not manured	1300

“In every case I have supposed these vegetables to be grown on a soil which is suitable to them, and which has been for some considerable period ameliorated by careful culture, and has been properly manured.

It must also be understood, that these products are calculated from an average taken from several successive years, since there always will be seasons in which some of the crops turn out badly, and others, on the contrary, in which they yield far more than the usual amount of produce. This consideration ought also to induce us to cultivate several different kinds of crops, in order that the gain on some of them may compensate for the loss in others."

I have already had occasion to remark, the farmers of northern Germany are celebrated for the extent of their dairies. "The produce of the dairy is, in that country, the most usual mode of turning horned cattle to account. Fattening is generally regarded as an accessory.

"I shall speak," says our author, "first of the dairy, and afterwards of the fattening of cattle. Milk may be disposed of in three ways: first, by selling it as it comes from the cow; secondly, by converting it into butter; thirdly, by making it into cheese.

"The desire to get rid of the trouble of inspecting the dairy and cow-stalls, and to ensure a certain and immediate, though smaller profit, has in many countries induced the majority of great farmers to let their dairies. On almost all the estates in Mecklenburg and on many in the Marches, there were formerly cattle-farmers who were there called *Hollanders*, just as dairies in these countries are called *Hollanderies*. The farming was usually arranged according to heads of cattle, and consequently endeavours were solely directed to increase their number, even though pasturage and fodder were continually diminished by the practice; this is perhaps the chief cause of the bad state of cattle in those countries. The cultivator ceased to take interest in his milch cows, and *there is nothing like the master's eye for fattening cattle.* The interest of the rural establishment became divided between two branches of economy, the cultivation of produce and the management of cattle, which can never thrive unless they go hand in hand. Unless the farmed herd were very numerous, consisting of 100 head of cattle or more, the advantages which it was necessary to concede to the farmers, swallowed up the greater part of the rent.

"To save the trouble of inspecting, not only the cows, but likewise the operations of the dairy and the preparation of cheese, which can never be well executed except by careful women, it is much better to sell the milk just as it comes from the cow at a reasonable price to a dairy-man. In this way both parties feel a certain security, and take interest in the milch cows and their produce: innumerable difficulties are avoided, and the contractors no longer seek to take advantage of each other, as they always do with regard to quantity of fodder when the farming is arranged according to the number of cattle. I look upon all other modes of farming as inconsistent with a good system of economy.

"Great care must be taken that the cows be completely and properly milked, for a scanty produce of the dairy often arises from neglect of this matter. It requires the constant attention of a woman capable of teaching the dairy-maids how to go work. She must, upon the least possible suspicion that a cow has not been well milked, put her own hand to the udder, in order to test the reality of her doubts, and draw off any milk that may be left in the udder. This attention is required, not for the sake of any additional quantity of milk which may be obtained at the time, but to prevent the loss which would result from diminished lacteal secretion, and to check the progress which carelessness is sure to make, when not promptly corrected. The four teats must be milked one after the other, even if one of them should not give any milk.

"If the udder be foul, it must be washed before milking, because the slightest foulness gives a bad taste to the milk, and may thus bring discredit on the dairy. This point must be carefully attended to, especially when the cows are stall-fed on green meat.

"The water, together with a sponge, or cloth, is contained in covered pails which the dairy-maids carry with them, and use as stools to sit upon.

"When the dairy-maids say that a cow has fallen off in milk, and is scarcely worth the trouble of milking, the milk must be gently warmed, to try if it will curdle: if not, the milking must be continued, in order that the cow may not be accustomed to remain long without giving milk. The milking of every cow must, however, be discontinued about a month before she calves, even though she should yield a quart of milk, otherwise she will be too much exhausted.

"Some persons maintain that cows yield a greater quantity the oftener they are milked; but this opinion is not borne out by careful experiments. On the contrary, it has been proved that as much milk is obtained when the cows are milked twice, as when the milking is performed three or four times a day: some persons have, in fact, obtained a greater quantity of milk, but not of such quality as to yield more butter. It is only when the secretion is most rapid, and such that the udder cannot contain all the milk, but allows some of it to drop out spontaneously, that a third milking becomes necessary.

"The first portion obtained at each milking is not so rich as the last: but I have never observed so great a difference between the two portions as some persons pretend to have remarked. In places where one part of the milk is sold, and the rest made into butter, these two portions are sometimes separated, the latter only being taken to make butter.

"When milk is to be sold fresh, it is important to keep it at a low temperature; not, however, below the freezing point. If the fresh milk be carried to a town at a considerable distance, the produce of the evening milk is usually devoted to this purpose, and carried away as soon as drawn, the vessel containing it being immersed in cold, and sometimes in iced water; the carriage is performed during the night, so that the town may be reached early in the morning. At short distances from town, the morning milk may also be added.

"This mode of disposing of milk is looked upon as the most advantageous of all. This is, in fact, the case, though not without limitation: for the system involves expenses, details, and superintendence, which are not in the power of every farmer. It is certainly the most convenient method, for those who can sell their milk as soon as drawn to a retailer, who takes it away, and is accordingly allowed a profit to recompense him for his trouble. In localities where there is a town-market for fresh milk, there is generally, also, an opportunity of selling fresh butter for the table; and the price of this butter is such as to yield a profit at least equal to that which can be obtained by selling the milk directly. In the country, the quantity of fresh milk which can be sold is but trifling: but there is sometimes an opportunity of selling skimmed milk, whey, and buttermilk, to advantage.

"In order to make butter perfectly good and fit for keeping, it is necessary to make one's self acquainted with the process in all its stages.

"A good milk-room is an essential condition. It is usually formed under ground, for the sake of maintaining a proper and equable temperature. The ground is covered with stone slabs, and the false floor thus formed is made to incline to one side, so that the water which is continually sprinkled, and that used for cleaning, may drain off into a cistern, and be carried away. The cellar, or milk-store, should have gratings, or apertures on two opposite sides, so that the air may circulate freely through it. These apertures are generally so disposed, that the draught of air may be felt not only in the upper part of the room, but also near the ground. The lower apertures must, however, admit of being shut when the wind is so high as to occasion risk of disturbing the milk-pails placed on the floor. The milk-store must be large enough to admit of the vessels being placed side by side, and not one upon the other: at all events, this latter arrangement is considered disadvantageous in the best managed dairies of Holstein. It is best to place the milk-pails directly on the floor, for it is there that the temperature is most uniform.

"A proper temperature is of the greatest importance in causing the milk to cream. If the temperature be too high, the milk turns sour before the cream collects on the surface, and then the cream will not separate. When the temperature is too low, the separation of the cream takes place very slowly. The most suitable temperature is between 12° and 15°. The former is the proper degree of heat for summer, and the latter for winter. To obtain perfectly good butter, we must be very careful not only to keep the vessels and utensils, but also the air of the room, perfectly pure. There is no liquid more susceptible in this respect than milk: foreign matter, and exhalations of all kinds, may impart to it a bad taste, an unpleasant smell, and various other defects.

"The disposition of milk to become glutinous and stringy often arises from nothing but a vitiated state of the atmosphere, though it may also proceed from some disease in the cow, which may be communicated to the whole mass of the milk, the appearance of a blue colour in the milk, or of violet spots on its surface, is in most cases produced by impurities in the air. It is probably a kind of mouldiness, developed on the cream as soon as it comes to the surface. This evil has, after many trials which have come to my knowledge, been cured by airing the cellar well, after it has been fumigated with chlorine or burning sulphur, the various utensils of the dairy being also exposed to this fumigation.

"The milk as soon as drawn, is poured through a sieve into the pails, in order that the cream may collect on its surface. The sieve must not be of woollen or linen cloth, but of hair, and kept in a state of perfect cleanliness.

"The vessels in which the milk is put to cream are of metal, earthenware, or wood. Those of metal, especially tin, appear from many trials to be decidedly the best for skimming the milk; but they are too costly for use in large rural establishments. Vessels of clay or porcelain are more easily kept clean than wooden ones, but they are too fragile. Attempts have been made to case them in wood, for the purpose of increasing their solidity. They should be well glazed, as otherwise, the milk when sour, will penetrate the clay: but glazes containing oxide of lead must be avoided, because sour milk would dissolve a portion of the lead; the quantity thus dissolved would, however, be very small. According to

Wistrumb's experiments, the danger arising from this cause is not so great as some persons suppose. Glass and porcelain vessels are too costly, and serve only to make a show. In large dairies wooden vessels are most commonly used; and when care is taken to clean them properly, and not expose them to the air, they are unexceptionable. Especial care must be taken to prevent their being contaminated by acid fermentation; for this purpose they must be washed from time to time with the lye of wood-ashes, and always scoured with water and a brush after being used. These vessels are usually made by coopers; but they are sometimes formed of a single piece of light wood, and flattened at the bottom, in order that they may stand well. The latter are decidedly preferable, both because they have no joinings, and are therefore more easily kept clean, and likewise because they expose a larger surface of liquid to the action of the air.

"In all cases the milk-vessels should be as shallow as possible, in order that the cream may rise quickly to the surface, and be more easily separated from the milk. Deep vessels of narrow surface are altogether disadvantageous and defective.

"Opinions are divided respecting the proper time for skimming the milk. Some persons allow it to curdle and turn sour before they skim, thinking to obtain a larger quantity of cream by so doing; but in Holstein, where the art of making butter is most thoroughly understood, the contrary opinion is entertained, and the cream is taken off before the slightest acidity is developed. The cream is considered ripe when the thrusting of a knife into it no longer causes any milk to rise to the surface.

"The latter method is decidedly preferable; for it is a demonstrated fact, that acidity not only does not assist the separation of the cream, but, on the contrary, stops it when once begun; and farther, that butter made from sweet cream, besides having a more agreeable flavour when fresh, is better adapted for keeping, and less exposed to become bitter. The slightest degree of acidity causes the mixture of cheesy particles in the cream; the layer to be taken off becomes thicker in consequence, but the quantity of cream is not really increased. It is of great importance to seize the moment when all the cream is collected on the surface, but no acidity is yet apparent. The time at which this effect takes place is subject to considerable variation, according to the state of the atmosphere. At a temperature of ten degrees (centigrade), it may be expected in 36 hours; at a higher temperature, it takes place in 16 hours; and during stormy weather, in 12 or even 10 hours. In the

Holstein dairies careful persons are set to watch the milk during the night, in order that they may ring up the dairy-maids as soon as the precise time is arrived: this they ascertain by the signs already spoken of.

"The cream is taken off by means of a wooden spoon, shaped like a shovel.

"The butter should, if possible, be made as soon as the cream is taken off. In well managed dairies only the portions of milk obtained in one day are mixed together. In small establishments, where butter is made only once in two or three days, the cream must be kept in earthen vessels, and as fresh as possible.

"Butter is separated from the surplus of cream with which it is mixed by a mechanical movement, produced in various ways. There are two sorts of *churns;* one tall, narrow, and fixed; the other shaped like a barrel. The latter either turns upon a fixed axis, having wooden vanes attached to it; or the barrel is fixed, and the axis with its vanes turns within it, being moved by a handle. Barrel churns have been extolled above their real merits. In order to estimate their value properly, and in general to form an idea of the points to be attended to in making, it is necessary to know how this substance is formed and separated.

"The fatty part of milk is not actual butter; the latter substance is formed by the action of the air upon the cream; in fact, by the absorption of oxygen. For this reason the air must have free access to the cream, and be renewed as often as possible in the vessels in which it is stirred. It has been shown by direct experiment, that oxygen is the principle most actively concerned in producing the change; for it has been found that the butter appears more quickly in proportion as the air is more charged with oxygen; and that when that substance is not present, the formation of butter does not take place.

"In this respect, the high, narrow, fixed churns have the advantage over those which are barrel-shaped, because the latter must be closed, and the oxygen contained in the confined portion of air is soon consumed; whereas fixed churns allow a sufficient quantity of air to enter, and moreover the air is constantly renewed in them by the agitation which effects the separation of the butter.

"But these ramming churns are likewise preferable in another point of view; the oily particles hardened by the air and transformed into butter, still swim in the liquid in a state of minute division, and must be collected by agitation into larger masses. Now, in churns which turn upon an axis, the motion is not sufficiently powerful, for, although the whole of the liquid is thrown into a revolving motion, it is not beaten and stirred up thoroughly as it ought to be. But in fixed churns the beating up and down produces a continual displacement of the milky particles, and thus brings the buttery portions into contact. The long fixed churns have also the advantage of being more easily cleaned than those which revolve.

"But as the beating or ramming motion is laborious when performed by unassisted manual strength, particularly with large quantities of liquid, various mechanical contrivances have been devised for diminishing the labour: they consist, for the most part, in attaching the rammer, by a moveable connection, to the arm of a lever. The butter is generally stirred in two churns at once, so that the rammer descends in the one at the same time as it rises in the other. Motion is given to the beam either by a heavy hammer, which is moved backwards and forwards by two men, and, when once set in motion, goes on without difficulty, or by means of a wheel whose circumference is loaded. In the very largest dairies, the machine is set in motion by horses or oxen. This method is, moreover, advantageous, inasmuch as it gives regularity to the motion, and then the butter is formed in a better manner than when the motion is sometimes fast and sometimes slow.

"In the preparation of butter, a point of equal importance with the preceding is the maintenance of a proper temperature. When the cream is too cold, the buttery particles become too hard, and not glutinous enough to stick together; too high a temperature, on the contrary, makes the butter very soft, and then the clots become divided during agitation, and mix again with the milk. If the cream be too cold, the churn must be heated, either by putting it in a warm place, or mixing a little warm water with the cream; when, on the other hand, the temperature is too high, it becomes necessary to cool the churn by placing it in cold water, or, if possible, in ice.

"There are, however, other causes of difficulty in the preparation of butter. The milk of cows in a very advanced state of pregnancy is not easily converted into butter. The process may sometimes be facilitated by the addition of a little salt; no injury will be done by the slight degree of saltness thus imparted to the buttermilk. It is also said that a piece of alum put into the strainer produces a good effect. Much praise has been bestowed upon a powder composed of dried *sorrel-leaves, horehound, yarrow, and nettle;* three handfuls of each, and half a pound of flowers of sulphur. A handful mixed with a pound of vinegar made from beer is given to each cow three times a day. The sulphur and beer-vinegar are the really useful constituents of this mixture. Sugar, ashes, or soap, falling into the cream, prevent the butter from forming. The common people attribute this accident to witchcraft, and resort to all sorts of superstitious ceremonies to obviate it as well as other defects in the milk.

"When butter is to be coloured, the colouring matter must be placed in the churn. With us, the colouring is usually given with carrot-juice. In Holland, they use *marigolds*, which for this purpose they gather fresh; they then put them into a stone vessel, press them together, cover them completely, and keep them in cellars. A deeper colour is given by *roucou*; an ounce of which, in bits the size of a pea, is put into thirty pounds of cream the evening before the butter is made.

"Butter, as soon as made, should be separated from its milky residue, for the latter being much disposed to ferment, would infect the butter and give it a bad taste. In Holstein, butter is not washed, but very carefully kneaded, washing being considered injurious. For my part, I prefer washing, provided the butter be well worked and kneaded afterwards. No moisture should be allowed to remain in it: the portion which cannot be got rid of is absorbed by common salt, and can no longer either ferment or cause fermentation. It is probably for this reason that butter for keeping must always be salted: the less butter is cleaned the more does it require salting. A pound of salt is added to five, ten, or twenty pounds of butter.

"The principal cause of butter acquiring a bad taste and smell after a while, is undoubtedly that a certain portion of cheesy matter remains in it, and enters into a kind of putrefaction. The less there is of this matter, the longer will the butter keep. In many places badly cleaned butter is melted to make it keep longer; the cheesy parts being separated by this fusion: but butter thus melted never preserves the agreeable flavour of fresh butter, and can only be employed for culinary purposes.

"When butter is kept in tubs or earthen vessels, it must be packed as closely as possible, and no interstices or vacant places left, for the butter quickly spoils around these interstices, and the evil spreads through the whole tub. In large establishments, it is considered essential that a tub be filled with butter made all in one day.

"Skimmed milk is used in various ways; it is sometimes mixed with buttermilk for human food; sometimes used in making bread; sometimes to make cheese; or, lastly, to feed pigs. These animals, as we shall hereafter see, are also fed upon whey.

" The whole of the milk is sometimes used, unskimmed, in making butter; and many persons consider this method advantageous, especially when only the richer half of the milk is used. But such butter will not keep long, and it is much less rich than common butter, because it contains a larger quantity of cheesy matter."

From these copious extracts from the works of Von Thaer (and the mine is not nearly exhausted), the intelligent farmer will see how laboriously their author endeavoured to improve the practice of farming in Northern Germany; and that in thus exerting himself, although steadily availing himself of all the aids of the improved practice of other countries, he, at the same time, anxiously sought the assistance of science, well knowing that although the practice is the test by which every agricultural improvement must be tried, yet that it is science which not only explores, but discovers, and guides the farmer to the best, because the most certain paths.

Besides the work from which I have made these extracts, Von Thaer published—1, an Introduction to English Agriculture, 3 vols.; 2, the Annals of the Agriculture of Lower Saxony, 3 parts; 3, a Translation of Bergen on Cattle, 3 parts; 4, a Description of the most useful Agricultural Implements, 1 vol.; 5, a Translation of Bell's Agricultural Essays, 1 part; 6, Annals of Agriculture, 1805 to 1810, 12 vols.; 7, Meyer on Irrigation—Einhoff on Chemistry; 8, Annals of Agriculture, from 1811 to 1812, and 1817 to 1823 (Moglinischen's Annals of Agriculture); 9, a Text Book for the Breeding of Fine-Woolled Sheep; 10, an Essay on Large and Small Farms; 11, an Attempt to Ascertain the Net Produce of Farms; 12, an Introduction to a General System of Agricultural Knowledge; 13, a History of My Farming; 14, a Translation from the French of Perault de Jotemps—Fabry and Girod on Wool and Sheep Breeding.

14, GRAY'S INN SQUARE,
November, 1844.

STURMINSTER AGRICULTURAL SOCIETY.

The annual exhibition of stock and dinner of the above society, took place at Sturminster, on Thursday, the 5th December.

The dinner was at Pyke's Crown Hotel, there being a highly respectable attendance. Earl Grosvenor took the chair, and presided with much ability and kind feeling. The Rev. H. F. Yeatman discharged the religious duties of the table; and the cloth being removed, the usual loyal toasts having been given, and the immediate business of the meeting transacted,

The Rev. Sydney Godolphin Osborne said, he never could understand why the soldier who had served his country in war in foreign parts should, in his old age, or when unfit for exertion, be treated with kindness and taken care of any more than the worn-out labourer who had passed his days and spent his strength in the cultivation of the soil, from which they derived almost all they possessed. He did not say the old soldier should not be taken care of, but he did say that the honest, industrious old labourer was entitled to the same consideration. One of the labourers to whom they had awarded a premium was 80 years of age, and he had faithfully served one master for years with unblemished character; let them think of the patience, perseverance, honesty, industry, and moral courage of such a man, for so long a period, and say if he was not entitled to reward as much as any man in any other station. He believed they were doing, and were anxious to do, their best to meet the spirit of the age and the spirit of the times, and that they would make every sacrifice to restore that spirit of independence among the labourers which had been the boast of this country,—to improve their condition, and so to provide for the poor as would meet the wishes of all.

The chairman said he was delighted to hear what had fallen from his eloquent friend, Mr. Osborne. He would first take the question of tenure of the tenantry in relation to the landlords; and he would ask any one who had travelled in any country in the world, if, when they saw a house going to decay, the windows partly demolished, and the wet soaking into the rafters, that house was not held on a lease for lives? He would go on to the second point—leases for a number of years—which he thought were also an evil; the landlord would, under this system, get as much as he could, and the tenant, if things were not exactly as he thought they ought to be, would, at the approach of the end of the time, work out the land as much as possible; besides this, it put a stop to the term of intercourse between the landlord and tenant, which he considered a great evil. The other tenure was that which he believed was most adopted in this part of the country—a yearly tenancy. Both tenant and landlord, in this case, were willing that there should be an amicable understanding between them; but, as had been observed, the tenant might say to his landlord, if he had only this yearly tenure, how could he be expected to lay out capital in improvements? This was, he admitted, a difficult question. He did not think the landlord would expect the tenant to lay out his money under such circumstances without some kind of security. Then there was the other question that had been so eloquently alluded to by his rev. friend—that of the labourers. Much good might be done by attention to the state of the labourers' cottages, and other modes of serving them. With regard to the plan which had been proposed, and lauded at some of the agricultural societies as a panacea for all the evils of the country—the allotment system—he had no confidence in it, if carried out to the extent many desired. He believed it would entail upon this country almost all the evils which afflicted Ireland. By raising up a race of such small farm tenants, they would collect a class of almost paupers, who, on any change of times, would not be able to live, and from whom the safety of property would be endangered, as well as everything else held dear by Englishmen. He had spoken of the injudicious extent to which some wished the allotment system to be carried out, yet he hoped he should not be understood as objecting entirely to the field garden plan, because, if kept within due bounds, by giving a quarter of an acre to the labourer, for the purpose of employing his leisure time, and improving his condition, and which would afford occupation for his wife and children, it would do great good. But let him touch upon the main difficulty involved in the labourers' question—employment and wages. Did they not know that supply must be regulated by the demand? Did not every one know, that if labourers were few, and labour was plenty, wages would rise? And did not every one know, that if there were plenty of labourers, and but little employment for them, the rate of wages would fall? He did not wish to speak with harshness towards any class,—that some should be sent abroad and some retained at home,—but his wish was, that some should be made happy at home, and some be made happy abroad. They would understand, from his observations, that he meant emigration. He would conclude by proposing a toast, which, in the exercise of his authority as their chairman, he should call upon them to drink in bumpers—"Success to the Sturminster Agricultural Society."

The chairman then proposed the health of the Sheriff, and also that of Lord Rivers.

The chairman observed that he had before expressed his wish to hear from practical men their experience on agricultural matters, and he should be glad if any of them would favour him and the meeting with their opinions. He saw a gentleman who he knew was able, and he had no doubt was willing, to give them a dissertation upon practical subjects of agriculture, which they would all be very glad to hear. He alluded to his worthy neighbour, Mr. Huxtable.

The Rev. A. Huxtable, of Sutton Waldron, rose and said, Before I proceed to practical farming, I hope you will not object to my making an observation on the great question of emigration in reference to the labourers. I do not agree with those who consider emigration as the great panacea for all the evils of the country, nor do I think, that it is necessary to resort to this plan for the purpose of relieving us from what some term our redundant population. On the contrary, I am satisfied that, at present in agricultural districts, we are far from having a surplus population, and that, instead of sending our labourers to a foreign land, we could profitably employ them in our own country. Why, my Lord, I think, if the farms were cultivated as they ought to be, and if the necessary improvements were made, instead of sending our labourers out to Canada, or other distant colonies, we should want to go abroad for labourers. And whilst this is true of our rural districts generally, it is emphatically true of Dorsetshire, where, in the Vale of Blackmore, thousands of acres require draining, and where, on the hills, thousands of acres of down land might be profitably brought into cultivation. Let us consider the extent of labour that would be created in breaking up waste lands. Each fresh acre taken into cultivation would call, at least, for an outlay of 28s. a-year in labour. And although gentlemen may love to gallop over those beautiful downs without control—I know this is a delicate subject to touch upon in Dorset, and especially in the presence of a worthy gentleman I see at the head of the room—yet they should remember that there is in the valleys a loud cry for labour and for bread. I do not object to the harmless and healthful recreations and sports of the country, but if we cannot employ our people in the valley, then, I say, let us mount the hills. Is not, I ask, the demand for labour enough to move the sternest heart? What is it the destitute labourers ask from us? They do not come knocking at our doors as idle mendicants, asking alms, but they ask for work. I have seen such men at the cross of my parish; and who can observe, in almost every parish, strong and yet peaceful men, standing at the cross-road, soliciting, not charity, but employment, saying, "Here we are, Sir, able in body and strong in nerve and arm, won't you give us work?" Who can see this, and not on his pillow revolve in his mind by what expedients this great power of our country, this noble race of fellows, more free from the taints of crime, more patient and enduring than perhaps any other class of their countrymen, may be turned to beneficial and practical uses? My own firm conviction is, that if we avail ourselves of improved arts of cultivation, remunerating labour may be found for all. First and foremost stands draining. I have executed many miles of drains 2½ feet deep, a perch apart, up and down the furrows, and I can truly state that, after the first season, the effect has been almost magical in the altered appearance of both soil and crops. No outlay, I am convinced, can produce so great a return. Why, then, do not gentlemen of capital, employ their resources in this way? How contemptible in comparison those miserable Three per Cents above par! The kohl rabi and some of the wurzel shown this day in the yard, were grown on land which, before draining, was valued at 8s. an acre. Another means of employing our surplus population, as they are called, may be found in transplanting mangold-wurzel, Swedes, and kohl rabi. The right practice is that the seed should be sown in a seed bed, at the end of March or the beginning of April. As soon as the vetches, rape, rye, or other winter crop is consumed, the land should be ploughed into ridges, and good dung laid in them, to be then covered over by splitting the ridges; after which the wurzel, Swedes, or rabi should be transplanted on them. This, I can tell you, is a certain means of obtaining a good crop, care being taken that the wurzel be nearly as thick as one's middle finger. It is only the sickly plants which fail. The expense of this transplantation can never exceed 15s. an acre, even when, in drought like that of this year, it becomes necessary to make a puddle, with liquid manure, to receive each plant. On my hill farm, upon land which, when in down, was supposed not to be worth more than 2s. 6d. an acre, in the burning month of June this year, while the chalk stones were quite hot, I succeeded in raising 12 acres of good turnips, in utter defiance of the fly. The plan pursued was, to mix the turnip seed with pigs' manure, and then to dibble both together into holes made with a bean-setting stick. This, of course, employed many hands, but the cost was not more than 7s. per acre in labour; and I invite any one to inspect the crop, and then decide whether the employment of surplus labour be not remunerating. Generally the plan of increasing the demand for labour is to grow more green crops, and more abundant ones. Last winter I subsoiled 18 inches deep a field previously well drained, and before horses could stand on it this spring I sowed with artificial guano, with drills made by hand, Belgian carrot seed previously steeped in liquid manure; and in consequence of using this manual labour I have gathered a harvest of 29 tons of roots and 11 tons of tops. Let me now, my Lord, mention the success and particulars of a method, which I learned from the American translation of Berger's German work (and this will serve to illustrate the advantage of "book farming," when corrected by practice), of preserving the surplus leaves of our green crops as winter food for cattle. The plan I pursued was to dig a long and deep pit, say 12 feet long, 6 feet wide, and 7 feet deep, in some dry spot, or made dry by draining; then to put a bed of straw, or vetch haulm at the bottom; upon this a layer of leaves, carrot or mangold, was strewed a foot thick, and trampled firmly down by two or three men; then a layer a salt, at the rate of 4lb. of salt to every cwt. of leaves distributed evenly; then another layer of leaves, and another of salt, until the pit was filled: then it was covered with bavins, straw, and earth, so as effectually to keep off the weather, and to be as far as possible air-tight. In a few days a violent fermentation came on, and a great subsidence of the materials; the pit was re-opened, and again filled, as before. This morning I opened one of the pits, containing carrot tops, to see, after three weeks' fermentation, in what state things were. The appearance was at first certainly most unpromising; it seemed to be a mass of greasy dung; but, not dismayed, I carried some to the cows, and found they ate it eagerly. So I have covered up my pit again, feeling assured that when, in perhaps a month, the fermentation is over, I shall have a large bulk of valuable winter fodder for my milch cows. Practical men will see the value of this plan, when they bear in mind, that on taking up their roots they have on their hands from 10 to 14 tons of tops per acre. But, my lord, there is another mode of employing our rural population, more important, perhaps, than any other yet suggested—that is, in the cultivation and after-management of the flax crop, equally valuable for the fibre and the seed. Here, however, we are met with the general objection, that flax is an exhausting crop, and its growth forbidden in gentlemen's leases. But this prejudice I believe to have no other foundation than the classical authority of a line in Virgil's first Georgic. I have the experienced authority of a gentleman at Gillingham, who has grown flax for many years, and who declares that his best wheat crop is after flax. If we wish to estimate the value of a flax crop, we must recollect the following facts (for which, as well as for the information which I possess on the subject, I am indebted to that able and patriotic gentleman, Mr. Warnes, jun., of Trimingham):—The importation of flax (from Belgium chiefly) amounted to more than £5,000,000 a year—viz., a sum very nearly equal to the amount of poor rates of all England; and the value of this fibre consists chiefly in the labour expended on it. Now, besides these £5,000,000 paid by England for foreign labour, £2,000,000 or £3,000,000 more are sent annually out of this country for linseed-cake; and what stuff is it? I appeal to any gentleman who has examined it with a microscope, to bear witness of what incongruous and worthless materials it is, in a large measure, composed—mustard and refuse seeds, &c. (" And old rope," by Mr. Farquharson, which elicited a loud laugh.) Yet we are continually sending away all this money,—observe, gentlemen, money,—not, as the free traders would wish us to believe, British manufactured goods in exchange. An instance of this was cited the other day at the Arundel agricultural meeting. A gentleman stated that five or six ships, loaded with linseed cake, left their cargoes at Hull, without laying out a shilling in goods, or even drinking a pint of beer, carrying off pure bullion. And yet on this article there is a fixed and small duty. This is what is called free trade, gentlemen! Whilst we are sending away all this money for fibre and seed, we might most advantageously be growing and manufacturing this admirable crop ourselves. In our farmhouses and cottages, four acres of flax would employ from 10 to 12 hands the whole winter months, in shelter and amidst their families. And as to the value of the seed, I have learned, by the use of 2lb. a day, grown on my own farm, properly ground, and diluted with boiling water poured over cut straw or chaff (consisting of straw and turnip tops) to feed my cows at 2½d. a-day, and to obtain unusually rich cream for the breakfast table, and this without giving any hay. Indeed, so great a discovery do I consider this, that I mean utterly to discard, in future, the use of that fodder, hay, hitherto considered so indispensible for milch cows and a breeding flock. I have two cows which I call my experimental cows. I assure you that when I first had them they were miserable looking animals; but now they have sleek coats and are in good condition, giving excellent milk. I shall be glad to show them to any gentleman who will be kind enough to pay me a visit.

The chairman alluded, with much good humour, to the sport of fox-hunting, and to the remarks that had fallen from the Rev. Mr. Huxtable about cultivating the downs. He was sure they all felt that they owed much respect to a most excellent gentleman, who had kept the hounds in this county for so long a period, and thus contributed to their amusement, and to the public benefit. He begged them to drink to Mr. Farquharson and his fox hounds.

Mr. Farquharson returned thanks amidst loud cheering.

The Rev. S. G. Osborne, in some eloquent observations, proposed "The Health of the Chairman, Earl Grosvenor."

Earl Grosvenor sincerely thanked the company, and then proposed "Their excellent Honorary Secretary, Mr. Dashwood."

Mr. Dashwood returned thanks in a very able manner.

The chairman said, it was their bounden duty to appreciate merit wherever they met with it, and especially to respect it in all who had to perform the arduous and difficult duties of public officers. Whether they looked at the way in which Mr. Yeatman discharged his duties as Vice-Chairman of the Court of Quarter Sessions, or considered him as a magistrate and a country gentleman, who promoted peace, harmony, and justice, without infringing upon their legitimate amusements, they must all entertain towards him the highest respect. He proposed "Mr. Yeatman and the Magistrates of the county of Dorset."

The Rev. H. F. Yeatman said—I am desirous of saying a few words upon one or two of the most important of the topics which have been so eloquently discussed by those who have preceded me on this occasion. First, with regard to the allotment system: about 15 years ago I was called upon by the Labourers' Friend Society to deliver my sentiments upon the policy and expediency of extending allotments of ground or field gardens to the poorer classes of society. My sentiments on that occasion were warmly responded to, and the speech which I delivered was thought worthy of publication. But I regret to say that I was not supported by the gentry and the yeomanry, and the allotment system in this division of the county has not been encouraged, except by Lord Rivers. But I have remained true and steadfast to my own principles, and for 15 years past I have afforded field-gardens to the deserving poor of the parishes of Stock Gaylard, of Lydlinch, and Holwell, in which my property is situate, at the common and ordinary rent, as ought to be the case, at the rent at which every ordinary tenant would occupy it; and what has been the result?—why, that the soil is beautifully cultivated; the poorer tenants are happy and are thankful, and not one of nearly 40 has been committed for a single crime during the whole of that long period. With regard to another subject which has been introduced by our noble and distinguished president in connexion with this—I mean that of emigration—I agree with my noble friend, that this is a remedy for existing and future distress that can only be had recourse to by the parent state in cases of the severest and most urgent emergency. Before I could consent to this, remembering that there are 15,000,000 acres of land now lying uncultivated in this kingdom, 5,000,000 of which might be cultivated with advantage; that vast tracts of this land are in the possession of the Crown; and that it is in our power, by rewarding and stimulating British industry, to render ourselves independent of foreign supplies, and to keep our gold at home; I must say, that whilst a single acre can be found in this country capable of cultivation, I cannot consent to drive the labourers of England to drain the swamps of Canada, or plough up the parched and interminable prairies of our Australian possessions.

Shortly after the meeting broke up.—*Times.*

SMITHFIELD CLUB ANNUAL SHOW.

This great exhibition commenced on Wednesday, the 11th of December, and continued till Saturday, the 14th; and was of an average character. The show was honoured with a visit from her Majesty, and His Royal Highness Prince Albert, the Duke of Saxe Cobourg and Gotha, Duke Ernest of Wirtemburg, &c.; and was also witnessed by at least 60,000 spectators.

The implements were more numerous than at any previous exhibition and attracted much attention.

The exhibition of seeds, roots, agricultural produce, &c. was also extensive. Messrs. Thomas Gibbs & Co. had a fine collection of dried grasses, a varied assortment of roots in turnips, mangold wurzel, kohl rabi, &c., and a specimen and sample of the Tussac grass of the Falkland Islands. Messrs. Geo. Gibbs & Co. also had an interesting display of roots, wheats and seeds; but the only articles exhibited by Mr. Skirving, of Liverpool, whose name is so familiar to our readers, were some beautiful and heavy specimens of Swedish turnips, and some choice plants of the Chili pine.

AWARD OF PRIZES.—OXEN.

CLASS I.—Oxen or Steers, of any breed, under 5 years of age, without restrictions as to feeding, yet the kind or kinds of food must be certified.

Mr. Robert Smith, of Burley-on-the-Hill, Rutland, a 3 years and 11¾ months old improved short-horn steer, bred by himself, and fed on oil-cake, barley and bean-meal; vegetables, and hay. Travelled by van 20, and by railway 100 miles—First prize, £20, and a silver medal.

Mr. John Hudson, of Castle Acre, Norfolk, a 3 years and 10 months old Hereford ox, bred by Mr. John Longmore, of Orlton, near Leominster, and fed on grass, hay, swedes, linseed cake, and mangold wurtzel. Travelled by van 100 miles—Second prize, £15.

Mr. T. L. Meire, of Cound Arbor, Shropshire, a 3 years and 11 months old Hereford ox, bred by himself, and fed on cake, pea and barley-meal, boiled barley, grains, grass, hay, turnips, and mangold wurtzel. Travelled on foot 2, by van 7, by canal-boat 50, and by railway 100 miles—Third prize, £10.

CLASS II.—Oxen or Steers, of any breed, under 6 years old, weight 90 stone and upwards, that shall not have had cake, corn, meal, seeds, grains, or distillers' wash, during 12 months previous to the 1st of August, 1844.

Mr. James Bult, of Kingston, Somerset, a 4 years and 10 months old short-horn steer, bred by himself, and fed on hay, grass, swede turnips, 300 lbs. of flaxseed, 5 bushels of peas, 11 bushels of barley, and 9 bushels of beans. Travelled on foot 5, and by railway 163 miles—First prize, £30, and silver medal.

Mr. J. T. Senior, of Broughton House, a 4 years and 8 months old Hereford ox, bred by Mr. James Nash, of Aconbury, near Hereford, and fed on grass, hay, and 960 lbs. of oil-cake. Travelled on foot 4, and by railway 43 miles—Second prize, £20.

Sir John Henry Palmer, Bart., of Carlton, Northampton, a 4 years and 2 months old Durham ox, bred by himself, and fed on grass, hay, turnips, carrots, mangold wurtzel, cabbage, 1545 lbs. of oil-cake, and 435 lbs. of bean-meal. Travelled by van 25, and by railway 60 miles—Third prize, £10.

CLASS III.—Oxen or Steers, of any breed, under 5 years old, under 100 and above 70 stone weight, that shall not have had cake, corn, meal, seeds, grains, or distillers' wash, during 12 months previous to the 1st of August, 1844.

His Grace the Duke of Bedford, of Park Farm, Beds., a 4 years old Hereford ox, bred by his grace, and fed on grass, green tares, hay, turnips, 500 lbs. of linseed-meal, and 500 lbs. of barley-meal. Travelled by van 42 miles—First prize, £15, and silver medal.

Mr. Henry Chamberlain, of Desford, Leicester, a 4 years and 10 months old Hereford ox, bred by himself, and fed on grass, hay, green vetches, turnips, 180 lbs. of cake, and 625 lbs. of pea-meal. Travelled on foot 10, and by railway 102 miles—Second prize, £10.

CLASS IV.—Oxen or Steers, of any breed, not exceeding 4 years and 3 months old, and under 80 stone weight, that shall not have had cake, corn, meal, seeds, grains, or distillers' wash, during 12 months previous to the 1st of August, 1844.

His Grace the Duke of Bedford, of Park Farm, a 3 years and 9 months old Hereford ox, bred by his grace, and fed on grass, green tares, hay, turnips, 500 lbs. of barley-meal, and 500 lbs. of linseed-meal. Travelled on foot 3, by van 6, and by railway 41 miles—First prize, £10, and silver medal.

Mr. John Manning, of Harpole, near Northampton, a 3 years and 10 months old Hereford ox, bred by Mr. James Williams, of Culmington, near Ludlow, and fed on grass, hay, 850 lbs. of cake, and 4 bushels of bean-meal. Travelled on foot 7, and by railway 69¾ miles—Second prize, £5.

CLASS V.—Oxen or Steers, of any breed, under 4 years and 6 months old, and under 80 stone weight, without restrictions as to feeding, yet the kind or kinds of food must be specified.

Mr. W. J. Bailey, of Shenley House, Stoney Stratford, Bucks., a 3 years and 8 months old Hereford steer, bred by Mr. W. Wheeler, of Ivington Park, near Leominster, and fed on grass, hay, and cake. Travelled on foot 5, and by railway 50 miles—First prize, £10, and silver medal.

COWS AND HEIFERS.

CLASS VI.—Fattened Cows or Heifers, under 5 years old. Freemartins and spayed Heifers are not qualified.

Mr. Henry Brown, of Ashby-de-la-Zouch, Leicestershire, a 4 years and 6 months old Durham heifer, bred by himself, and fed on oil-cake, barley, grass, cabbage, swedish turnips, and hay. Travelled by van 25, and by railway 96 miles—First prize, £20, and gold and silver medals.

The Right Honourable Earl Spencer, of Wiseton, Nottinghamshire, a 4 years and 5 months old short-horned cow, bred by his lordship, and fed on hay, turnips, cabbages, pea-meal, barley-meal, and oil-cake. Travelled by van 20, and by railway 172 miles—Second prize, £10.

Sir Thomas Whichcote, Bart., of Aswarby Park, Lincolnshire, a 4 years and 5 months old Durham heifer, bred by himself, and fed on linseed-cakes, bean-meal, oat-meal, hay, and vegetables. Travelled by van 38, and by railway 107 miles—Third prize, £5.

Class VII.—Fattened Cows or Heifers, of 5 years old and upwards. Freemartins and spayed Heifers are not qualified.

Mr. John Beasley, of Chapel Brampton, near Northampton, a 5 years and 4 months old short-horned cow, bred by himself, and fed on grass, turnips, mangold wurtzel, hay, linseed-cake, and oatmeal. Travelled by van 9, and by railway 60 miles—First prize, £20, and silver medal.

Mr. John Carwardine, of Marsh, near Leominster, a 5 years and 11 months old Hereford cow, bred by the late Mr. John Morris, of Stratford Bury, near Leominster, and fed on grass and oil-cake. Travelled on foot 48, and by railway 113 miles; has had 1 calf—Second prize, £5.

Class VIII.—Fattened Cows, of 5 years old and upwards, that shall have had at least 2 live Calves at separate births.

Mr. J. S. Burgess, of Holme Pierrepoint, near Nottingham, a 7 years and 5 months old short-horned cow, bred by Mr. Robert Burgess, of Cotsgrove place, Nottingham, and fed on cake, beans, vegetables, and hay. Travelled by van 5, and by railway 136 miles; has had 3 calves—First prize, £15, and silver medal.

Major Browne, of Welbourne, Lincolnshire, a 13 years old short-horned cow, bred by himself, and fed on linseed-cakes, swedes, turnips, hay, clover, and lucerne. Travelled by van 49, and by railway 100 miles; has had 6 calves—Second prize, £5.

EXTRA STOCK.—Cattle.

Mr. R. Morton, of Peakhill, Lincolnshire, a 4 years and 8 months old short-horned ox, bred by himself, and fed on linseed, turnips, cabbages, and carrots. Travelled by van 55, and by railway 70 miles—Silver medal.

SHEEP.

Class IX.—Long-woolled fat Wether Sheep, 1 year old, that have never had cake, corn, meal, seeds, or pulse.

Mr. J. S. Burgess, of Holme Pierrepoint, Nottinghamshire, a pen of three 20 months old long-woolled wethers, bred by himself—First prize, £20, and silver medal.

Mr. Thomas Twitchell, of Wellington, Beds., a pen of three 20 months old Leicester wethers, bred by himself, from rams hired of Mr. Samuel Bennet, of Bickerings Park, Beds.—Second prize, £5.

Class X.—Long-woolled fat Wether Sheep, 1 year old, under 8 stone weight, that have never had cake, corn, meal, seeds, or pulse.

Mr. J. S. Burgess, of Holme Pierrepoint, Nottinghamshire, a pen of three 20 months old long-woolled wethers, bred by himself—Prize, £10, and silver medal.

Class XI.—Long-woolled fat Wether Sheep, 1 year old, without restrictions as to feeding.

His Grace the Duke of Bedford, of Oakley West Farm, Bedford, a pen of three 20 months old new Leicester wethers, bred by his grace—First prize, £20 and gold medal and silver medal.

Mr. John Painter, of Burley, Rutland, a pen of three 21 months old New Leicester wethers, bred by himself, from a ram hired of Mr. Thorpe, of Clifton, Nottinghamshire—Second prize, £5.

Class XII.—Long and short-woolled cross-bred fat Wether Sheep, 1 year old, without restrictions as to feeding.

Mr. C. Tomson, Sundon, near Luton, Beds., a pen of three 21 months old Southdown and Gloucester cross wethers, bred by himself—First prize, £10, and silver medal.

Mr. W. Bennett, of Lewsey Farm, Bedfordshire, a pen of three 21 months old Down and Leicester cross wethers, bred by himself—Second prize, £5.

EXTRA STOCK.—Long-woolled Sheep.

Mr. Charles Large, of Broadwell, Oxfordshire, a 56 months old new Oxfordshire ewe, bred by himself—Silver medal.

Class XIII.—Short-woolled fat wether sheep, 1 year old, without restrictions as to feeding

Mr. Samuel Webb, of Babraham, near Cambridge, a pen of three 20 months old Southdown wethers, bred by Mr. J. Webb, of Babraham—First prize, £20, and silver medal.

His Grace the Duke of Richmond, of Goodwood, Sussex, a pen of three 20 months old Southdown wethers, bred by his grace—Second prize, £5.

CLASS XIV.—Short-woolled fat Wether Sheep, 1 year old, under 8 stone weight, without restrictions as to feeding.

Mr. Henry Upton, of Oving, Sussex, a pen of three 20 months old Southdown wethers, bred by Mr. A. Pinnix—Prize £10, and gold medal and silver medal.

CLASS XV.—Short-woolled fat Wether Sheep, 2 years old, without restrictions as to feeding.

E. G. Barnard, Esq., M.P., of Gosfield Hall, Essex, a pen of three 32 months old Southdown wethers, bred by himself—First prize, £20, and silver medal.

Mr. Stephen Grantham, of Stoneham, Sussex, a pen of three 32 months old Southdown wethers, bred by himself—Second prize, £5.

EXTRA STOCK.—SHORT-WOOLLED SHEEP.

Mr. John Harris, of Hinton, Berkshire, a 21 months old Southdown wether, bred by himself—Silver medal.

CLASS XVI.—Pigs, of any breed, above 13 and under 26 weeks old.

His Royal Highness Prince Albert, of Windsor Castle, a pen of three 25 weeks and 4 days old Suffolk and Bedfordshire pigs, bred by his Royal Highness, and fed on milk, barley-meal, and pea-meal—Second prize, £5.

Mr. W. F. Hobbs, of Marks Hall, Kelvedon, Essex, a pen of three 25 weeks and 4 days old improved Essex pigs, bred by himself, and fed on oats, peas, meal, potatoes, mangel wurzel, and milk—First prize, £10, and silver medal.

CLASS XVII.—Pigs, of any breed, above 26 and under 52 weeks old.

Mr. J. Buckley, of Normanton Hill, Nottinghamshire, a pen of three 27 weeks and 2 days old Neapolitan and Warwickshire pigs, bred by himself, and fed on barley flour—First prize, £10, and silver medal.

The Right Hon. the Earl of Radnor, of Coleshill, Berks., a pen of three 44 weeks and 1 day old Coleshill pigs, bred by his lordship, and fed on whey, barley-meal, and potatoes—Second prize, £5.

EXTRA STOCK.—PIGS.

Mr. W. F. Hobbs, of Marks Hall, Kelvedon, Essex, a 25 weeks and 4 days old improved Essex pig, bred by himself, and fed on oats, peas, meal, potatoes, mangel wurzel, and milk—silver medal.

THE DINNER.

The annual dinner of the Smithfield Club took place at the Freemasons' Tavern, on Friday. The attendance on this occasion was smaller than we have noticed it for some years past.

The first toast proposed on the removal of the cloth, was "The Queen." In introducing her Majesty's health, the noble chairman said —I have to offer to your notice a toast which I am sure you will receive with the most cordial favour. It will, I am confident, be well responded to on this occasion, especially when I tell you that her Majesty has been pleased to say that she will honour us with her presence in the show-yard to-morrow morning, having received her gracious commands to meet her at the Bazaar at ten o'clock, to give her Majesty a view of the show. The advantage of such a condescension on the part of her Majesty is great, because we may rest satisfied that we are a body with which her Majesty is much pleased. I consider, gentlemen, this is one of the highest honours that could be conferred upon us. It is quite unexpected. I am sure, therefore, you will most cordially join with me in drinking her Majesty's health, with three times three.

Earl Spencer then said—The next toast I have to give you is one which will meet with your cordial approval. You all know the virtues and good qualities of the Queen Dowager. I must observe, however, that Prince Albert must feel gratified in having gained a prize at this show, so am I. Her Majesty has, no doubt, a desire to encourage our club, but I beg to intimate that her visit to the show-yard to-morrow morning will be strictly private. It cannot fail to be an advantage to this club, as well as the country generally, in having his Royal Highness Prince Albert as one of our members. The toast I have now to propose to you is "The Queen Dowager, Prince Albert, Albert Prince of Wales, and the rest of the Royal Family."

The chairman again rose and said,—The next toast I purpose giving you is that of "The Smithfield Club." I regret we have not quite so large a number at dinner this evening as usual. The cause of the absence of many may be the cold weather. With respect to the show itself it is a good one; still, it is not one of the best we have ever had. We have witnessed more beasts in some of the classes; but, considering the sort of summer experienced this year, the falling off is not to be wondered at. We have had under consideration that class in which there are restrictions as to feeding: that class in some former years was almost invariably good, and we have deemed it necessary to make a few slight alterations in the rules. Hitherto no animal could be shown in the restrictive classes, which had had artificial food for 12 months prior to being exhibited. This, we have thought, has given a great advantage to the large farmers over the small ones; and we have come to the determination that the 2d, 3d, and 4th restrictive classes shall, in future, allude to the 1st of May, instead as before, to the 1st of August. Such an alteration will, we think, make it better for the beasts shown in the other classes. The original principle of the club, as laid down by the Duke of Bedford—that of encouraging the production of food at the cheapest rate—is here carried out. I think the alteration a good one, and I have thought it desirable to mention it before the bills come out. This club I conceive to be of the greatest possible advantage to the country. Although we do not give prizes for breeding stock, we offer to others a more effective mode of increasing the value of stock throughout the country. This club has now been established 46 years, during which its advantages have been great in the extreme. It may be said we have arrived at perfection, but we must still go on and show that greater benefits may yet be effected. The cessation of giving prizes would tend to the deterioration of the stock of the country, for, although the breeders of stock know the right mode, still I am confident, were the competition taken away, they would not exert themselves as they have done. Competition must be of immense advantage in increasing their knowledge, and in showing that they can produce better animals than those abroad. I need hardly say that we have a great national object in view, and which object is now permanently established. In looking at the financial state of the society, I am happy to say it is most flourishing. We are now able to give the prizes without encroaching upon our funds; for we have this day ordered some money to be funded, and yet we have a good balance in hand for next year. Exclusive of the rent to be derived from the yard, we have a sufficient sum to meet the necessary disbursements for the prizes. The club may, therefore, be considered in a prosperous condition. Before I sit down, I must express a hope that no further measures may pass to lower the prosperity of the farmers of the kingdom. I now give you "Success to the Smithfield Club."

The chairman then said, the next toast I have to offer is "The Vice-Presidents of the Club." I have often sat with only one; but now I have one on each side of me—Mr. Pusey and the Duke of Richmond, the latter of whom has always attended. We have had a very great loss in one of the original members of the club, and which every one must regret: I allude to Lord Leicester. It was my happiness to be in constant communication with him; and every one must allow that he was a most amiable and an honest man. He was one of those who constantly supported this club; and I need hardly say, that he did great service to agriculture, as well as to his country generally. It is with deep regret I have to state this loss; but I could not propose this toast without referring to his lordship. We must, however, now look forward to one to whom we owe so much—I mean Lord Hardwicke—whom we have elected to-day as one of our vice-presidents. I now give you "The Vice-Presidents."

The Duke of Richmond, who was received with great cheering, said, —I rise to return thanks for the compliment you have paid to the Vice-Presidents. I was anxious to return thanks for myself only, and that Mr. Pusey should do so for himself. I cannot do better than return you the expression of your kindness, for no man can be indifferent to the approbation of the farmers of the country—and for whom I entertain the highest respect and esteem. Whenever it has been my good fortune to meet the farmers, I have felt that my intentions were good, and I challenge any one to prove that I have not endeavoured to benefit the farmer, as well as assisted in ameliorating the condition of the labouring classes. Gentlemen, my noble friend having brought forward the Vice-Presidents, I have to thank you for the honour. But I am sorry to say that I shall not be able to return thanks as a successful competitor at the show. However, I have sent my best sheep to it, and, though defeated, I will still persevere. I agree with my Lord Spencer upon the advantages of this club; indeed, scarcely a person could be found to deny their existence. I have sought every opportunity of doing good to the owners of the soil, and it is to me a great pleasure to be able to associate with the tenantry of the empire. It is a great advantage thus to meet, as we are enabled to divest ourselves of many old prejudices; and it is my fervent wish that agriculture may always continue in its present good favour. But my noble friend has here given the lieutenant, corporal, and battalions, before the general, but the health of the latter you will presently drink. I remember worse times with the club than these: but when those times took place, who brought us into our present state? Our noble president. I beg, therefore, to give you, "The Health of Earl Spencer," with three times three.

Earl Spencer said,—I am very much obliged for the honour you have done me, and I always receive such a mark of kindness with great pleasure. I have felt it my duty to promote the interests of this club. It was true, when I took the office of president, it was with difficulty we could raise funds for the premiums; but now our financial affairs are in a flourishing state. As respects the exhibition of pigs, I think it is of great importance to the labourer, because it eventually places before him food at a cheap rate. It is only by thus pressing forward that the agriculture of the country can be brought into a flourishing condition. I do not know to what perfection that science may be brought, but I have felt it my duty to promote its success. As to what I have done for this club, I am deserving of no thanks; but still it is most gratifying to me to know that, though there may be some points of difference between us, I am received with such cordial feelings of kindness, which renders these meetings so highly gratifying. After again thanking the company, the noble earl sat down amidst loud cheering.

The chairman now read over the awards. The healths of the successful competitors in the first class having been proposed, the Duke of

Richmond intimated that he hoped they would show themselves, at the next dinner, as well as the cattle had done on this occasion.

Mr. Smith, of Burley-on-the-Hill, near Oakham, rose to respond to the toast as the winner of the first prize. He said,—the animal I have exhibited has been bred by myself, and I think that every one ought to be proud of the Smithfield Club in a national point of view. I cannot but express my satisfaction at having been elected one of the stewards for the next three years. When the office was first proposed to me, I was apprehensive that my age would tell against me; but having filled a similar office in the Rutland Society for nine years, I trust I shall go out of office at the expiration of the three years with as much satisfaction to myself as at Rutland.

Earl Spencer next gave, with three times three, "The Successful Competitors in the Half-bred Sheep."

Mr. Bennett, of Lewsey Farm, near Dunstable, said—my Lord Spencer and gentlemen, I am proud at having to return thanks as one of the successful competitors for the half-bred sheep prize. My friend on my left, Mr. Morton, and myself, have been fighting for some time past for the mastery. My friend must take care, or I fancy he will lose his present footing next year.

The chairman then gave "The Successful Exhibitors in Short-woolled Sheep.

The Duke of Richmond rose and said—I rise not for the purpose of returning thanks, as I had hoped that Mr. Webb or Mr. Upton would have risen to reply to the toast; but as, when I was at the Westminster school, the head boys often "fagged" the younger ones, so I suppose they mean to do so by me. I hoped that I should have been relieved from this infliction upon you. Mr. Webb has carried off many prizes at this show, and I trust he will not compete with me again. There is only one gentleman who has not come up to this show with stock not bred by breeders: I allude to Mr. Upton. This, in my opinion, is of great importance, as it shows that a tenant farmer can compete and get a medal from the great flockmasters of the country. Mr. Upton, who is a neighbour of mine, does not go to the great breeders to procure his stock, but goes to another tenant farmer for that purpose. There are many who have said, "It is of no use to send stock to the Smithfield Show, as the large landowners will go to so great an expense; consequently we stand no chance with them." But the prize having been carried off by a tenant farmer, I trust this will not be said in future. A great deal has been said about jealousy amongst breeders. It can scarcely be otherwise, from human nature; but I believe that the Southdown breeders are anxious to improve the breed, and I think that you will say they are all grateful for the honour you have done them. I think Mr. Webb is bound to speak on this occasion. I never object to rise for the purpose of returning thanks. I have invariably made it a rule never to speak against the decision of the judges; therefore I say nothing against the judgment, much less the motives of those gentlemen. I could much wish to see the impression of the Southdown breeders removed, as to the policy of allowing the downs to be judged by the Leicester gentlemen. His grace concluded by saying that he thought the company would not be satisfied unless Mr. Webb acknowledged the compliment.

Mr. Jonas Webb rose and spoke to the following effect:—Owing to the appeal which had been made to him he was obliged to say a few words. It would be recollected that he stated, two years ago, that he had won all the first prizes in the various classes of the Southdowns, with the exception of the 13th class, and that he should continue to send sheep to compete in that class until he carried off the prize. He had castrated this pen of sheep on purpose to show on the present occasion, and it was a source of great gratification to him that his exertions had been crowned with success. It was, however, but a matter of justice to state that, in consequence of extensive alterations which had been made in his farm buildings, his brother Samuel had had the feeding of the sheep.

The next toast was, "The Successful Competitors in Pigs," which was drunk with three times three. Mr. Fisher Hobbs, of Mark's Hall, near Kelvedon, Essex, rose to return thanks. Mr. Hobbs observed, that in the absence of his Royal Highness Prince Albert, he begged to reply. He felt it a great honour to have received a prize before his Royal Highness. He (Mr. Hobbs) considered that there was no animal that required more attention in feeding than the pig. Although an unsuccessful competitor with the beasts, he would persevere on future occasions.

After the whole of the prizes had been announced, the noble chairman intimated that the Smithfield Show might be considered wholly for live stock, for he thought the agricultural implements—though he was glad to see them in the yard—did not properly belong to the club. It was a very good thing to see those implements, but he did not think it advisable to recommend any premiums being given to the makers. He (Lord Spencer) had seen a great many implements which gave him great pleasure. Hence he proposed "The Implement Makers of the Show."

Earl Spencer then gave "The Judges of the Show." Their office was a difficult one, therefore he thought the toast ought to be given with three times three.

Mr. Worthington, in the names of the other judges, briefly returned thanks.

The next toast was, "The Stewards of the Club."

Mr. Millward, in the absence of Mr. Chapman, returned thanks. The duty, Mr. Millward intimated, the stewards had to perform was not a difficult one; yet he was glad to find their efforts had met the approval of the meeting.

The chairman again rose, and thus expressed himself:—While we are anxious for the improvement of live stock, we cannot but be interested in the agriculture of the country. There is no portion of that science worthy of greater attention than draining. Mr. Hodges is present on this occasion, and I now call upon him to state the improvements he has produced in the making of tiles for draining, for I understand they are highly important. I hope I am not doing what may be considered irrelevant to this meeting, in calling upon Mr. Hodges to explain the improvements he has made in the manufacture of drain tiles. The subject would have been brought before the public through the medium of the Royal Agricultural Society; but, as the journal does not come out till March, I think Mr. Hodges ought to be requested to explain now.

Mr. Hodges then rose and said,—My Lord Spencer and gentlemen, I respond to the call of the noble Lord with readiness. If you attach any importance to the subject which I now present to your notice, it will not be an improper one for discussion here. I consider that a great improvement in the manufacture of drain tiles might induce many to adopt the plan which I shall presently submit. No time should now be lost in preparing the clay for future use, by those who are desirous of securing a good and cheap drainage. Some time since, I was struck with the enormous weight of the tiles introduced into the county of Kent, in which I reside, and the heavy seignorage or royalty imposed upon them. These circumstances, of course, tended to increase the price, so as to place the tiles beyond the reach of many persons, and, unless the drain tiles can be made cheaper than at present, they will not come into general use. I hope to show that these tiles may be made by every farmer upon his own farm. In the month of July last, I had a tile kiln erected upon my own estate, and I had brought from London one of the machines you have seen in the yard to-day, invented by a person named Hatcher, and sold by Cottam and Allen. With this machine, I can, with a man and a boy, turn out 10,000 tiles a-day. I had a kiln of earth made, and produced 100,000 tiles in the summer, at the cost of only 4s. 9d per 1000. The kiln costs about £5, the machine £25, while the whole outlay does not exceed £50, including the erection of the necessary sheds. The particulars of my plan I shall communicate in some future number of the Royal Agricultural Society's Journal. In the kiln I have burnt both coals and wood, but the former are preferable.

After three or four other toasts, the company separated.—*Bell's Weekly Messenger.*

THE DUTY OF PARISH MINISTERS TO HAVE LIBRARIES FORMED THAT FARMERS MAY GET THE INFORMATION HOW TO PRESERVE AND PROTECT THEIR CATTLE.

Reported Distemper in Lancashire and Cheshire amongst Cattle, from Hay, Clover, and After-Grass top-dressed with Guano—recommended to be used with caution.

Sir,

I find many persons in Liverpool take merit for having been the first and done the most to introduce guano to the British agriculturist. No doubt great exertions have been made by many, with perhaps little reward to the really most laborious men, who may have toiled day and night, and lost their fortunes and health by exertions, and thus exhausted, "fallen into the grave unpitied and unknown;" yet, though I believe the most extensive record of the "Practical Results" ever published, or concentrated, will be found in your Magazine, I think there was more extensive information promulgated, *visibly* and orally, by Mr. Wm. Skirving, nursery and seedsman, Liverpool, when 6000 gentlemen (landed proprietors, all members of the Royal English Agricultural Society) walked through his grounds in one day, to behold the *wonderful*, magical effect of guano on all sorts of produce. Still 99 in 100 of them were sceptical as to its real properties, knowing that "all nurseries are hot-beds," and form no guide, *in their estimation, to field crops.*

The value of the article lagged very much, from its high price—15s. to 28s. per cwt.; and many merchants declined to advance on the cargoes, even to pay the freight, until a certain house took it up, and protected the property; when, through their Scotch friends, two entire cargoes, at £14 per ton, were taken for actual consumption, which stamped the current sale of the article.

Hearing numerous reports of the bad tendency of guano for hay and other crops—it giving cattle a sickly turn, and actual distemper to a large extent, now much talked of, I send you the enclosed letter,* which I received some time back. It would be well for farmers to be cautious, in not over-dosing their land with any artificial manure.

Lord Stanley omitted calling attention to the laxity of farmers in seeking knowledge through agricultural libraries, which should be established in every village in the United Kingdom, to protect farmers from losing their cattle. Mr. Chadwick, farmer, near Kirkdale, lost 30 head of cattle this season.—Yours, truly,

JOSEPHUS LILLEY.

December 23, 1844.

THE DUKE OF GRAFTON ON THE PRESERVATION OF GAME.

At the request of a friend we make the subjoined extracts from "A Letter to the Magistrates of the Western Division of the County of Suffolk, on the Preservation of Game. By the Duke of Grafton."

"The idea of an assessment of game was suggested to me by a friend, with whom I had a conversation a short time previous to the sessions, so short indeed, that I had no time to communicate my intentions of bringing it forward, after I had determined in my own mind on so doing, except to two or three individuals.

"My own mind had been so long alive to the great evils arising from game preserving, both from the general acknowledgment, almost amounting to a proverb in this county, that poaching is the beginning of crime, and from personal observation, that it was well prepared to receive the impressions of any remedy calculated to counteract or mitigate this great evil.

"The suggestion of my friend, therefore, of the justice and expediency of assessing game, had the effect of creating in my mind the almost immediate idea of adopting the mode which I did to bring the subject before the bench, in the hope of bringing it, through the bench, before parliament.

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* The letter alluded to never reached us.

"Having thus stated the first object I have in view, in making this address, I now come to the second, that of stating my views on this subject, and my reasons for having brought the matter forward, and for continuing more strongly in the same opinion thereon.

"First, however, I take leave to remark that, although the assessment of game is what I suggest as an act of justice, I do not consider that any assessment on it would compensate for the evils which the extreme system of preserving it inflicts upon the social system in this country.

"But, if the system of preserving game is to be continued, it is no more than a just and equitable requisition, that that which has such a tendency to immorality and crime, which it engenders in the lower class (and so increases the county expenditure,) should contribute, in some way, towards defraying those expenses to which it gives rise.

"I am aware that it is argued that a proprietor or occupier of land has a right to stock his farm with game as well as with sheep and cows or oxen. The right is admitted; but there is this obvious difference in the character of these above-named things, as well as in their nature: first, the one is wild and the other tame; the one can be driven home and preserved, the other not; the one is of general value and use to the community, and is therefore especially exempted from tax, as farming horses have of late been: the other is a luxury and of no general value to the community, and if cultivated as stock, occupies the place of more useful things.

"The younger part of the community may suppose that the system of preserving game has existed from time immemorial. I beg to tell them the contrary, and that I have lived to see the rise and progress of this great evil-stirring system.

"Our fathers, and we of the earlier part of this generation, were satisfied with a very little spoil to our gun, and were more gratified by the health we obtained by the exercise, and by the sagacity of our dogs, than by the effects of our shooting. But the system is changed. The sagacious dog is scarcely used to hunt the woods and fields, but men and boys are used for these purposes.

"This practice, which introduces them into the haunts of the game, has a very bad tendency in leading these individuals into the temptation of poaching.

"For, is it not evident, that they, especially boys, whose minds are more pliant to good or evil, will be tempted to possess themselves of some of that game which they are made to see hoarded up for a particular day's amusement? and when a wet or idle day comes, will not this idea, created by this system, cross their minds, and lead them to practice the first incipient lesson in poaching? and induce them to traverse these woods and fields at night, and to practice all sorts of devices and schemes whereby to entrap the game, and elude the vigilance of the keepers?

"That the fact is so, no one can doubt; that it does place such temptation in their way must be evident; for the division sittings of the justices demonstrate the truth of it—the quarter sessions and assizes give more public proof of it, and the records of convictions at these courts demonstrate that poaching and the increase of other crimes go hand in hand.

"Is it then wonderful that our calendars are so filled with charges of all sorts of crimes? for, as I have before said, no one disputes that poaching in this county is the beginning of all crime; so in proportion to the increase of poaching must crime of every denomination have increased, and be daily increasing.

"I do not mean to say that these men or boys are justified in taking that which is not their own because they are tempted; but I, on the other hand, ask, are we justified in placing this temptation in their way? If we pray 'not to be led into temptation,' how can we consistently or conscientiously make such a petition for ourselves, if we are guilty at the very moment of putting temptation in the way of others?

"It is evident that the ill effect of this system has operated most upon the rising generation; for the race of poachers are active young men—men capable of work, and who would have been willing to work, if they had not been drawn from the path of legitimate industry to the exciting and pernicious employment of poaching.

"We may go to the right and left and find other unhappy causes for the increase of crime; for I do not say that there are not other causes, or that we are blameless in everything else; but here is one palpable and plain and distinct cause in the catalogue of the guilt of some of us; not all, for it would be indeed hard to attribute guilt to those who are not preservers of game.

"And here, does it not at once present itself to the mind, how unjust it is that a whole community should suffer for the indulgence and self-gratification of a portion of that community?

"It is then the duty and interest of those who are the cause of this guilt, to extricate ourselves from the reproach which some of us have unhappily gathered around us, both for the sake of our own peace and quiet as individuals, and for our characters as magistrates and conservators of the public peace; for I look upon it, that it is not less the duty of a justice of the peace to *prevent* crime, than it is his avowed obligation, if he undertakes the office, strictly and impartially to administer the laws of the country.

"Although it is the moral effect which this system has upon society which it is principally our duty to consider, other evils occasioned by it are not to be overlooked.

"The first of these is the injury which game does to the growing crops, and the next is, the injury which the superabundant supply of game, at particular seasons, has upon the market, by competing, at these periods, with the sale of the more legitimate live productions of the land.

"There is no doubt of the injury which hares and rabbits especially do to the young crops growing on the farm, independent of the increased expense to the farmer to endeavour to protect his crops from their inroads.

"The amount of this injury is differently stated, but it has been stated as high, in some localities, as ten shillings an acre. If this be correct in this county, it is an injury to the extent of the rent of the land in many instances.

"This is not only an injury to the farmers, but an injury to the community, for it diminishes the produce of the land, and, inasmuch as the produce of the land is diminished, in that respect is the cost of that produce increased to the community. The farmer is not benefited by the increased price, because a larger quantity at a lower price will remunerate him as well as a smaller quantity at a larger price; the public have, therefore, a greater right even to complain of the inroads of game on the produce of the land than the farmers themselves. But there is still another evil attending the preservation of game.

"The farmers are charged with not employing a sufficiency of labourers, or of employing them at low and inadequate wages. If this be the case, why is it so? Not because the labour market is overstocked, but because half the labouring population subsist half the year on the profits of game, and the other half year are out of employment, when game is not legally sold.

"How is the farmer to take into his calculation the employment of these men, who seldom, if ever, wish to be employed, except at a particular season of the year, when it suits them, and even if they are inclined to work, they are neither willing nor able to do a day's work, for a man cannot work both day and night?

"But I should also observe that the want of physical strength in the labourer, who is engaged at night as well as day, is not the only impediment to his doing a reasonable day's work; for his mind is so engrossed with that one object of poaching, that he has no taste for labour, no zeal for legitimate work; he undertakes it as a toil, and lays it down when he is tired of it, or does something which almost obliges his employers to discharge him, and he then, perhaps, complains of the hardness of his employer for discharging him.

"The blame then for the unemployed state of such men is not to be laid to the farmer, but to the preservation of game.

"Do away with all the temptation to poach, and the men who have been engaged in it will, by degrees, return to more regular and industrious habits; not, indeed, at once, for bad habits are not easily shaken off, but they will return, and by no slow degrees; for the farmer will employ more labour on his farm, because he will have more confidence in the character of his labourers, and will be assured that the labour he pays for is expended on his land.

"His mind, too, will be more at ease, and his resources will be practically improved by the increased production from the increased diligence of labour bestowed upon his land. By increased production, he will still be able to employ more labourers, and at better wages, and this will hold out a temptation to the individual, who was once a poacher, to return more rapidly to legitimate habits of labour.

"Do away with game preserving, and the pocket of the farmer is relieved, in a great degree, from poor and county rates; for these are both increased by the preservation of game, which, while it tends in every way to moral evil, has, as a pecuniary evil, increased these items of local expenditure."

After showing the imperfect education which the children of the rustic poor receive, and its consequences, his grace thus proceeds—

"There is now one more view of this subject which I will shortly advert to, and which I do in consequence of the observation made in a letter published in the *Bury Post,* of July 31st, 1844.

"The subject is the amusement which the writer, in the course of his letter, says he is willing to allow to the higher classes of society.

"I am quite willing to concede to them so much of amusement as is consistent with the good of society, and with their own duties as citizens and Christians. I am not inclined to think that any class of individuals is privileged to be idle. The highest class of society happily has its duties, as well as the lowest; and if it had not its own peculiar duties that class would be cursed and not blessed, and it is only by the higher class being extremely attentive to the duties which its station requires of the individuals who compose it, that it can reasonably and justly expect that other classes of society will do their respective duties.

" In strictness, amusements, in whatever class of society they occur, ought to be carried on in subordination to men's other duties. It is not the privilege of country gentlemen to be idle and not to contribute in any way to the good of society; and, least of all, should it be their privilege to add evil to society by an extravagant pursuit of shooting.

" They have many other methods of filling up their time beneficially, both to themselves and their neighbours, besides their employment in killing game. If the upper classes of society follow their amusements to the neglect of the interests of those beneath them, they may have their amusements, but they can have no gratification from them.

" We may talk of what is amusing, we may plan what we think will be amusing, but be the amusement, so called, what it will, if merely taken as an amusement, it will fail to afford delight or satisfaction to the mind, if unaccompanied by the feeling that what we are engaged in has a tendency to contribute to the happiness and welfare of our fellow-creatures.

" If, then, amusements, which are not absolutely vicious, fail to afford satisfaction because they do not contribute to good, how much more will those amusements be unsatisfactory which have a particular vicious tendency?

" For instance, how can real gratification wait upon the slaughter of a thousand head of game in one short day? Is it possible that this so-called amusement, which is sickening to men who hear of it, can be of real gratification to the actors in the sport?

" If we consider the cost of this amusement, even if the amusement was purely virtuous and free from all the vicious tendencies of game preserving, it is a frightful waste of that wealth which is given to us for other purposes than thus to be used in self-gratification.

" And when to this is added the amount of demoralization which accompanies the preserving of game, the gratification must be still more diminished.

" I feel assured that those gentlemen who are most deeply engaged in preserving game, will, when they reflect on the subject, be the foremost to make reparation to the community for the evil which their hitherto preservation of it has caused to society, by abstaining in future from such excess in preserving it."

TRANSACTIONS OF THE COUNCIL MEETINGS OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The Council resumed their sittings for the session, at the Society's House, in Hanover Square, on Wednesday, the 6th of November, William Miles, Esq., M.P., in the chair.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, laid before the Council the report of the Society's funds on the last day of the previous month: the amount of invested capital was £7700, and the current cash balance in the hands of the bankers £928. The report was then confirmed, and checks ordered for the various payments recommended by the Committee.

Colonel Austen called the attention of the Council to the large amount of arrears of subscriptions still remaining unpaid, and trusted that some still more vigorous and decisive step would be taken by the Council to ensure the payment of the subscriptions as they became due from year to year.

Mr. Pym, Mr. Fisher Hobbs, and Mr. Kinder having stated the success which had attended their efforts in Bedfordshire, Essex, and Hertfordshire, as honorary collectors of the Society's subscriptions within those districts, expressed their willingness to continue those exertions.

Elections of Council.—On the motion of Mr. Raymond Barker, seconded by Mr. Shaw, the Council resolved unanimously, that Philip Pusey, Esq., M.P., Chairman of the Journal Committee, should be requested to accept the office of a Trustee of the Society, vacant by the decease of his Grace the Duke of Grafton.

Mr. Thomas Lockley Meire, of Cound Arbour, near Shrewsbury, was elected a Member of Council, in the place of the late Mr. Edward Gough, of Gravel Hill, near Shrewsbury.

Shrewsbury Meeting.—Earl Spencer, Chairman of the General Shrewsbury Committee, addressed a communication to the Council, in reference to the arrangements of the annual country Meeting to be held at that place next year; and Mr. Brandreth Gibbs reported the result of his personal visit to Shrewsbury, and his interview with the owner of the fields intended for the trial of implements, and which had been now placed, agreeebly with the instructions of Mr. Shelley and Mr. Miles, the stewards of that department, under proper cultivation for that purpose. Mr. Gibbs also reported, that Earl Spencer and Mr. Taylor had undertaken the trial of the wheat selected at Southampton for cultivation in reference to the Society's prize.

Prize Essays.—Mr. James Adam Gordon, of Naish, near Bristol, addressed to the Council a communication, in which he proposed to place the sum of £30 at their disposal as a prize for the best Essay on the Influence of Electricity on Vegetation. The Council ordered their thanks to be given to Mr. Gordon for this liberal offer.

Ashes of Plants.—The Marquis of Northampton and Sir John Johnstone, Bart., M.P., communicated a proposal to the Council on the part of the British Association, that the Society should join with that body in contributing a sum of money from its funds for the purpose of obtaining a complete series of analyses on the ashes of plants from various localities, to be made under the immediate superintendence of Professor Graham, who had liberally placed his services, on this occasion, gratuitously at the disposal of the two institutions. The consideration of this question was postponed until the monthly Council in December.

The communications of M. Hugues on his sowing machine having been referred to the Journal Committee, and his offer of a model accepted, thanks were ordered for the numerous donations made to the Society.

A monthly Council was held at the Society's House, in Hanover Square, on Wednesday, the 4th of December; his Grace the Duke of Richmond, President, in the chair.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, read the report of the Committee on the state of the funds of the Society at the close of the month last ended: the invested capital amounted to £7700, and the current cash balance in the hands of the bankers to £531.

Local Collectors.—The Council resolved, on the motion of Mr. Pym, seconded by Mr. Gibbs, that it was desirable that paid Collectors should be appointed in counties or districts; and that the details of the system should be referred to a Committee, consisting of Mr. Pym, Mr. Shaw, Mr. Gibbs, and the members of the Finance Committee.

Lectures.—Mr. Pusey reported to the Council the arrangements already made for the delivery of Lectures before the Members at their ensuing Christmas Meeting, by Dr. Playfair, Consulting Chemist of the Society.

Lists of Members, Models, &c.—On the motion of Mr. Fisher Hobbs, seconded by Mr. Shaw, it was resolved,—That a list of the Members of the Society should be printed in a cheap form, and appended to the first half-volume of the Journal for 1845, to appear about Midsummer in that year. On the motion of Mr. F. Hobbs, it was resolved,—That an inventory, with an index, should be prepared, of all implements, models, &c., in possession of the Society. On the motion of Mr. Fisher Hobbs, seconded by Earl Spencer, it was resolved,—That a catalogue of the books in the library should be made by a professional person to be engaged for that purpose, under the direction of the Home Committee.

Judges of Stock.—On the motion of Mr. Fisher Hobbs, it was also resolved,—That in future the judges of stock shall be appointed by the Council, from a list of nominations made by the members at large at a general meeting, and on the report of a committee to whom such list shall have been referred. On the motion of the Hon. Captain Spencer, seconded by Mr. Bennett, it was resolved—That in the appointment of judges of stock, those names only shall be given to the stewards of the yard, determined by the council for each breed; that in case one or more of those names shall not appear, a supplementary list of judges shall also be given to the stewerds, who shall, from such list, fill up the vacancies.

Exhibition of Stock.—On the motion of the Hon. Captain Spencer, it was resolved —That after the awards of the judges of cattle shall have been delivered to the director of the yard by the several stewards, such members of the Council (not being exhibitors) whose duties for the society prevent them from seeing the cattle when the public are admitted, who shall be named by the Council a month prior to the meeting, shall be admitted to view the cattle from five o'clock till seven of the Wednesday (provided the awards shall have been delivered); but that the awards shall not be declared before the usual time—namely, after the Council dinner.

A weekly Council was held at the Society's House, Hanover Square, on Wednesday, the 11th of December, the Duke of Richmond, President, in the chair. The proceedings were unimportant, consisting of the election of new Members, the receipt of communications, &c.

HALF-YEARLY MEETING.

The December half-yearly meeting was held at the Society's house, Hanover-square, on Saturday last, the 14th instant, at one o'clock p.m., his Grace the Duke of Richmond, K.G., President, in the chair.

Since the last half-yearly meeting upwards of 300 new members have been elected, and the Society now consists of the following members:—

Life Governors	97
Annual Governors	208
Annual Members	6037
Life Members	470
Honorary Members	15

making a total of 6827 members on the list of the Society at the present time.

Mr. Raymond Barker, chairman of the finance committee, read to the meeting the following balance sheets as audited on the previous day:—

1.—General Statement of Account from Jan. 1 to June 30, 1844.

Receipts.

	£	s.	d.
Balance in the hands of the bankers, Dec. 31, 1843	657	11	8
Balance in the hands of the secretary, Dec. 31, 1843	14	2	1
Half-year's dividends on stock	130	16	6
Life-compositions of governors	150	0	0
Life-compositions of members	268	0	0
Annual subscriptions of governors	827	10	0
Annual subscriptions of members	3904	8	0
Sale of Journal	232	17	8
Sale of cottage tracts	10	1	0
Receipts during the half-year, on account of the country meetings	1080	6	9
Payment made in error to Messrs. Drummond by Sir C. Glyn & Co	25	0	0
	£7300	13	8

Payments.

	£	s.	d.
Permanent charges	270	12	6
Taxes and Rates	20	7	2
Establishment Charges	562	7	6
Postage and Carriage	37	7	1
Advertisements	9	19	0
Expenses of Journal	1268	8	6
Prizes	320	10	0
Miscellaneous Payments	47	1	7
Payments during the half year on account of the Country Meetings	1291	2	9
Balance in the hands of the Bankers, June 30, 1844	3456	19	8
Balance in the hands of the Secretary, June 30, 1844	15	17	11
	£7300	13	8

(Signed) T. R. Barker, Chairman of the Finance Committee.
T. Austen,
H. Blanshard,
D. Barclay,
C. B. Challoner,
Members of Finance Committee.
Downshire, Trustee of the Society.
C. H. Turner,
T. Knight,
Auditors on the part of the Society.

2.—SUMMARY OF THE SOUTHAMPTON MEETING BALANCE SHEET.

Receipts.

	£	s.	d.
Subscriptions from Southampton	1000	0	0
Dinner tickets	849	4	0
Ladies' gallery tickets	83	10	0
Show-yard	2432	3	2
Sale of catalogues	363	19	0
Sale of hurdles	192	19	8
Sale of badges for council and stewards	7	10	0
Excess of payments over receipts at the Southampton meeting, chargeable on the funds of the Society	806	19	4
	£5736	5	2

Payments.

	£.	s.	d.
Dinners	946	1	0
Ladies' gallery refreshments	25	0	0
Pavilion	794	12	0
Show-yard and trial of implements	2630	11	7
Police	121	15	0
Judges	354	14	6
Consulting Engineer	65	1	2
Auctioneer	21	0	0
Surveyors	7	14	0
Printing	409	5	9
Stationery	19	1	7
Advertisements	255	5	4
Carriage	36	14	10
Postage	11	4	7
Official staff	32	0	4
Extra clerks	15	8	0
Swearing-in constables	0	15	6
	£5736	5	2

(Signed) RICHMOND, President.
T. R. RAYMOND, Chairman of Finance.
C. B. CHALLONER.
THOMAS AUSTEN.
HENRY BLANSHARD.

On the motion of Sir Harry Verney, seconded by Mr. Dean, the thanks of the Society were voted to the judges at the Southampton meeting.

Earl Spencer then proposed the thanks of the Society to Dr. Playfair for the two lectures he had that week delivered to the members. Dr. Playfair had apologised for the imperfection of his lectures, occasioned by the short time given him for their preparation, but his lordship was quite sure that the members who attended them would agree with him in thinking that such an imperfection had not been perceived by Dr. Playfair's auditory on that occasion.

The Marquis of Downshsre having seconded the motion, it was carried unanimously.

Mr. Miles, M.P., then proposed that the thanks of the Society should be given to the Royal Institution of Great Britain, for the kindness they had evinced in granting to the Society the gratuitous use of their theatre for Dr. Playfair's lectures.

Mr. Samuel Solly seconded the motion. Mr. Solly took that opportunity of exhibiting to the members two remarkable specimens of English grasses, eight feet high; namely, the festuca gigantea, and festuca elatior. In a German work he had purchased at Mr. Lambert's sale, the latter grass was described as one of the most useful kind. Mr. Solly then seconded Mr. Miles's motion, which was carried unanimously.

Sir Harry Verney rose, to propose the thanks of the meeting to the finance committee and the auditors of accounts, on the part of the Society, for their great care of the financial interests of the Society; and the motion being seconded by Mr. Richard Millward, was carried unanimously.

Colonel Challoner returned thanks on the part of the finance committee, for the good opinion entertained of them and the auditors. He had the gratification to state, that the accounts were in a state of perfect regularity.

Mr. Knight, one of the auditors on the part of the Society, returned thanks to the meeting on behalf of himself and his colleague, Mr. Hampden Turner. He had the satisfaction of bearing his testimony to the extreme accuracy of the accounts of the Society.

Sir Harry Verney suggested the desirableness of connecting the Society with the different local societies throughout the kingdom, in the same manner as had been effected with great success by the Royal Agricultural Improvement Society of Ireland.

The noble President would not fail to bring Sir Harry Verney's proposition before the Council on the earliest occasion; at the same time he thought that the movement, in reference to any alliance such as that proposed, ought to originate with the local societies themselves towards the Royal Agricultural Society as the central body, whose collected information they already received, and diffused with so much practical advantage throughout their respective districts.

NOTICES OF NEW PUBLICATIONS.

On Landed Property, and the Economy of Estates: comprehending the Relation of Landlord and Tenant, and the Principles and Forms of Leases—Farm-buildings, Enclosures, Drains, Embankments, Roads, and other Rural Works—Minerals—and Woods. By David Low, Esq, F. R. S. London: Longman, Brown, Green and Longmans.

A work of high character, abounding with that kind of information which every landholder and farmer requires. We have seldom risen from the examination of a book with more gratification than what we derived on the present occasion; not that we coincide with the author in all his views, but because he has sent forth an ably written and well-digested work; and if the advice it contains be fairly followed, will certainly be productive of very beneficial changes in the management and economy of landed property.

The Sporting Magazine. London: Pitman.

This "care-dispelling" periodical is as lively and as varied in its contributions as we would wish to see it: long may it so continue.

The Veterinarian. London: Longman and Co.

The numbers for the last quarter contain much interesting matter relative to the Royal Veterinary College; and many excellent papers on diseases affecting stock.

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